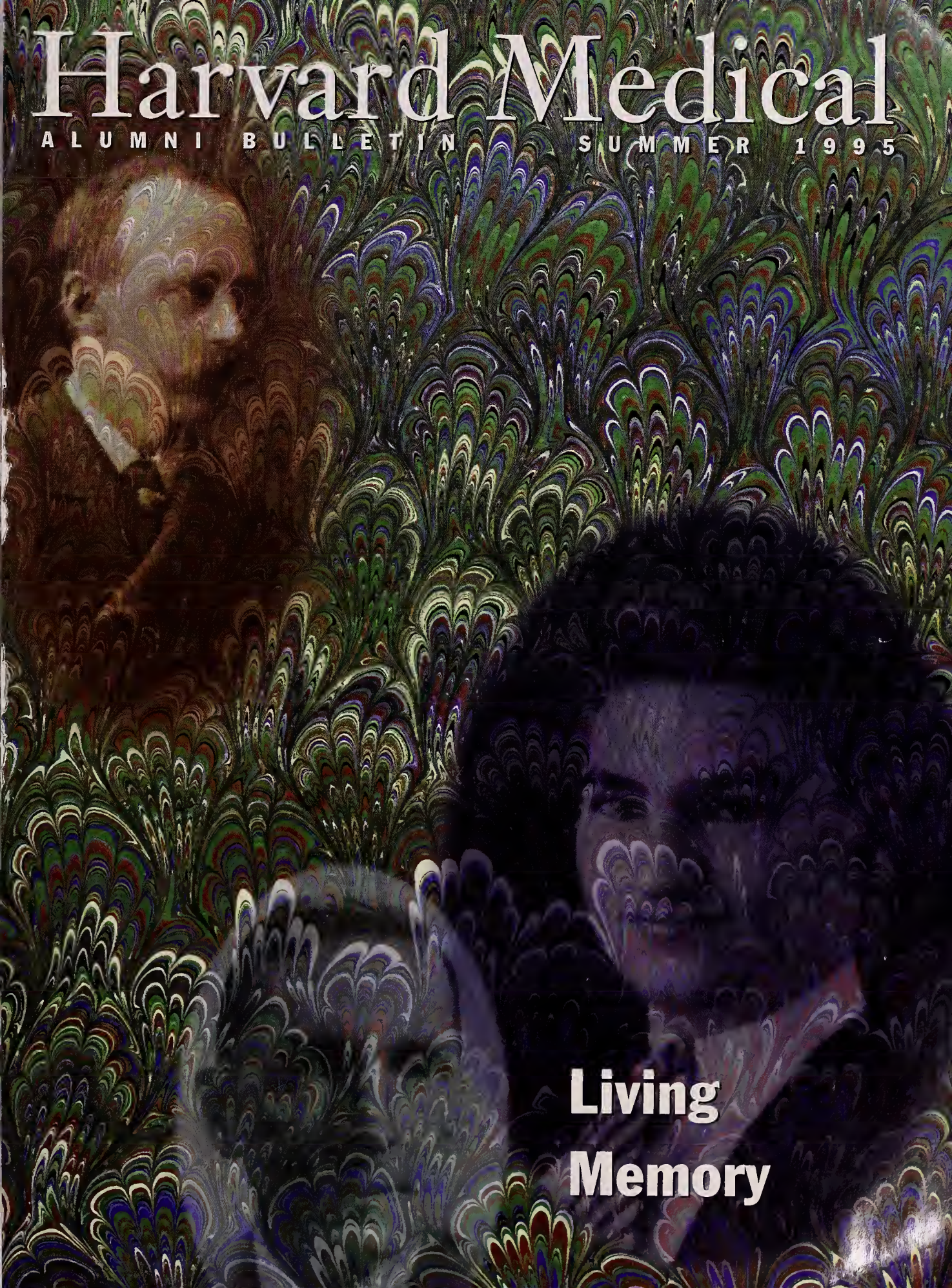
# Harvard Medical

ALUMNI BULLETIN SUMMER 1995



## Living Memory

# Fellowships for HMS Alumni

## 1996–1997

Fellowships are available for graduates of Harvard Medical School to undertake a year of post-graduate study. The amounts awarded for stipends are determined by the specific needs of the individual.

**Moseley Traveling Fellowship**
Support for at least a year of postgraduate study in Europe.

The Committee on Alumni/ae Fellowships gives preference to those Harvard Medical School graduates who have:
1
demonstrated their ability to make original and meritorious contributions to knowledge,
2
planned an innovative program of study which in the Committee's opinion will contribute significantly to their development as teachers and scholars,
3
clearly planned to devote themselves to careers in academic medicine and the medical sciences.

**Warren-Whitman-Richardson**
Support for research in the U.S. or abroad; not restricted to alumni. Directed to M.D. scientists who require further training.

**Deadline**
Although there is no specific due date, the Committee requests that applications be submitted not more than one year in advance of the requested beginning date. The Committee meets once a year in January to review all applications on file by December 31.

**Information and application forms may be obtained from:**
Committee on Alumni/ae Fellowships
c/o Sponsored Programs Administration
Harvard Medical School
Room 414, Building A
25 Shattuck Street
Boston, Massachusetts 02115
617/432-1596

SUMMER 1995
VOLUME 69 NUMBER 1

# Harvard Medical
## ALUMNI BULLETIN

Marbleized paper by Richard J. Wolfe, who practices the traditional craft of marbling used in the book arts to embellish hand book-binding. Ghosted images are of Herrman Blumgart, Alfred Reinhart and William Lambert Richardson.

# Letters

up with a reasonable cost accounting to justify a career of two or three decades? As with so many other problems, the government will be asked to underwrite the costs of medical education in the 21st century. Our government has never been too prescient in cost accounting or quality control, but when in control of the medical education purse, it will demand complete control of both the process and the product.

The disproportion and distortions of the current medical school admissions policy must inevitably displace equally or better qualified white male students from Harvard Medical School. Those of us who may disagree with current admission policy can do little to reverse the trend, but we can cease to contribute to the unrestricted funds that help underwrite that policy.

*John M. Carey '45*

# Pulse

**Residency on View**

Harvard Medical School students from the Class of 1991, who were documented by NOVA as they went through medical school, have now completed internship for all the country to view on PBS. Aired on May 3, this is the third of a four-part series called "Making of a Doctor," a 10-year project chronicling medical education through residency.

Viewers follow the seven new doctors—Elliot Bennett-Guerrero, Jay Bonnar, Cheryl Dorsey, Luanda Grazette, David Friedman, Jane Liebschutz and Tom Tartar—from their first fearful days on the job through the jubliant finish of the first year. The strains of internship take a toll: two marriages are broken along the way and exhaustion causes at least one of them to question the person he is becoming when he says, "all I want to do is get out [and sleep]."

But you do see their confidence growing and there are some heartwarming scenes as they more comfortably relate not always comforting news to patients and the families. By the end of internship, they really feel like doctors: "Dr. Liebschutz, it has a nice ring," says Jane Liebschutz.

It's time to move on to the rest of residency— "The fat lady has sung," says Grazette at her farewell party at Massachusetts General Hospital. The credits roll and we see flashbacks from their second-year show, the front of Building A... to be continued.

**David Friedman is one of the HMS graduates being followed by NOVA.**

photo by Eric Roth Studio for WGBH

**Mental Illness in the Third World**

While public health measures have resulted in a decrease in diseases such as smallpox and dysentary in the developing world, an unfortunate consequence has been an alarming rise in serious mental illness among the populations of the world's poorest nations, says a recent report published by the HMS Department of Social Medicine. As people's life expectancy increases, so does their risk of developing chronic mental illness.

"There is an emerging and largely unheralded crisis in mental, behavioral and social health in low-income countries," says Arthur Kleinman, Maude and Lillian Presley Professor of Medical Anthropology and head of the department.

The report, which was based on research by 88 specialists from 30 nations, found that Sri Lanka has the highest suicide rate in the world, nearly four times that of the United States; children in Malaysia, Bangladesh and Pakistan suffer mental retardation at rates two to three times higher than children in industrialized nations; estimated cases of schizophrenia are expected to rise to 24.4 million by the end of the century; and by 2025, the developing world will house three-quarters of the world's cases of dementia.

The outbreak of regional conflicts and civil wars from Rwanda to Guatemala has caused a massive influx of refugees—two-thirds of whom suffer from post-traumatic stress disorder and related conditions such as anxiety, depression and stress. "These displacements can destabilize the host country, aggravate regional tensions, and increase rates of environmental degradation," says the report.

The report calls on international health agencies to support existing community-based programs to integrate psychiatric care into primary health care delivery systems, including in some cases the use of traditional healers and rituals. It also recommends training mental health workers and developing efforts to assess the international burden of drugs and alcohol. It calls for a world summit and the declaration of a UN Year of Mental Health.

The report was presented to United Nations Secretary General Boutros Boutros-Ghali, who released a statement calling for an "international campaign" to address the issues.

**Veena Das, who contributed to the report, and Arthur Kleinman.**

photo by Barbara Steiner

**Galaburda Named Landau Professor**

Albert Galaburda, head of the division of behavioral neurology at Beth Israel Hospital, has been named the first Emily Landau Professor of Neurology. Emily Landau, a philanthropist who was diagnosed with dyslexia in her mid-50s, established the professorship to further the study of this disability, which affects approximately 5 percent of school-age children nationwide.

Galaburda, a leading authority on brain anatomy and one of a very few medical researchers to champion the study of dyslexia, has discovered microscopic anomalies in the cerebral cortex of those with the disorder. In studies on the brains of dyslexics, collected after the subjects had died, researchers in Galaburda's lab found that the neurons clumped together in an area called the medial geniculate nucleus (MGN) were smaller in the dyslexics' brains than those found in normal brains. The MGN is where auditory signals are directed throughout the brain; the size differential suggests that a mistiming may occur in dyslexics, which affects how words are processed.

"We are learning that genetic and environmental factors that influence brain development play a critical role in dyslexia," he says. "[This professorship] supports the efforts to carry out brain research aiming at a more thorough understanding of dyslexia and, eventually, a more effective means of preventing and treating dyslexia."

Landau, who struggled throughout her youth and young adulthood with the learning difficulties caused by the disorder without understanding why, established the Fisher Landau Foundation in 1984 to raise awareness of dyslexia and to identify children at risk. Her efforts led to the development of the Fisher Landau Screening, which identifies learning disorders in children as young as four and five years old.

She and Galaburda have worked together to develop a series of conferences entitled "The Extraordinary Brain," dedicated to exploring the different aspects of dyslexia and inspiring the attending scientists, who come from fields ranging from genetics to language development and brain imaging, to pursue research in this area.

photo by Barbara Steiner

**Emily Landau and Albert Galaburda**

photo by Barbara Steiner

David Kessler

## Kessler Decries Teenage Smoking

"It's easy to think of cigarette smoking as an adult problem since that's who dies from smoking," said David Kessler '79, commissioner of the U.S. Food and Drug Administration. "But that is a dangerously short-sighted view." Kessler spoke on nicotine addiction as a "pediatric disease" at a HMS lecture in honor of the late Norman Zinberg, a professor of psychiatry who specialized in addiction research.

"If someone hasn't started smoking by age 19 to 21, he or she isn't likely to ever become a smoker," Kessler pointed out. One-third to one-half of teenagers who try even a few cigarettes will become regular smokers. Every day 3,000 teens take up smoking.

The tobacco companies target teenagers with their advertising campaigns because they know this, said Kessler. To make smoking seem glamorous, advertising is linked to the world of sports and entertainment. Tobacco companies also have developed chewing tobacco products that "taste like candy," according to Kessler, and have low levels of nicotine as "starter kits" to nicotine addiction.

The FDA is currently deliberating whether it has jurisdiction over nicotine as a drug, and thus could more stringently regulate access to tobacco products. At the very least, Kessler argued, "Our society needs to make it harder for teens to buy cigarettes" and to convey the message that "addiction is freedom denied."

## The Match Is Made

It was another "amazing" year for HMS students with most matching to the top programs they wanted, according to Edward Hundert '84, associate dean for student affairs.

Following a national trend, an increasing number of graduates are heading for the primary care specialties; 50 percent of the Class of 1995 are going into family practice, internal medicine, medicine/pediatrics, pediatrics or primary care. "It is particularly interesting that we have four people going into family medicine since we don't have a department or residency in that specialty," says Hundert. But he points out that there are family medicine clubs and mentors on the faculty, so he anticipates that interest in it will increase.

The graduates and their intended specialties are:

**ANESTHESIA**

**Haddad, Tania**
**Massachusetts General Hospital**

**Salinas, Ricardo**
**Massachusetts General Hospital**

**DERMATOLOGY**

**Lockridge, Jason**
**University of Florida, Shands Hospital**

**EMERGENCY MEDICINE**

**Aponte, Jennifer**
**University of Cincinnati Hospital**

**Slater, Michael**
**McGaw Medical Center, NW University, Illinois**

**FAMILY MEDICINE**

**Antenucci, Christina**
**Swedish Medical Center, Washington**

**Bromer, Steven**
**University of California, San Francisco**

**Hatcher, Peter**
**Oregon Health Sciences University**

**MacDonald, James**
**Maine-Darthmouth Family Practice, Augusta**

Match Day photos by Barbara Steiner

# Pulse

Morden, Nancy
Duluth Graduate Medical Education

Nunez, Felix
Harbor-UCLA Medical Center

Twardon, Elizabeth
St. Paul/Ramsey Medical Center

**INTERNAL MEDICINE**

Abraczinskas, Diane
Hospital of the University of Pennsylvania

Albers, Mark
Massachusetts General Hospital

Brewster, Abena
Johns Hopkins Hospital

Buynak, Robert
Mayo Graduate School of Medicine, Minnesota

Calvi, Laura
Massachusetts General Hospital

Cappola, Thomas
Brigham and Women's, Boston

Cardinale, Carol
Presbyterian Hospital, New York

Chittenden, Eva
Beth Israel Hospital, Boston

Dick, Sarah
University of Washington Affiliated

Domchek, Susan
Massachusetts General Hospital

Dunleavy, Katherine
Johns Hopkins Hospital

Dunleavy, Keith
Johns Hopkins Hospital

Fairfield, Wesley
Massachusetts General Hospital

Fischbach, Neal
University of California, San Francisco

Foster, David
Beth Israel Hospital, Boston

Fraenkel, Paula Goodman
New England Medical Center

Frankel, Stephen
Beth Israel Hospital, Boston

Gates, Amy
University of California, San Francisco

Gillette, Michael
Massachusetts General Hospital

Gold, Alexander
Beth Israel Hospital, Boston

Ho, Carolyn
Brigham and Women's , Boston

Hsu, Ricky
UCLA Medical Center

Hung, Albert
Brigham and Women's, Boston

Johannsen, Eric
Brigham and Women's, Boston

Karson, Andrew
Brigham and Women's, Boston

Kim, Hans
Beth Israel Hospital, Boston

Ko, Ed
Cedars-Sinai Medical Center, Los Angeles

Maviglia, Saverio
Brigham and Women's, Boston

McHugh, Kathleen
Brigham and Women's, Boston

Paley, Jeffrey
Massachusetts General Hospital

Povsic, Thomas
Duke University Medical Center

Raman, Chitra
University of Chicago Hospital

Roberts, David
Massachusetts General Hospital

Rubenstein, Mark
Massachusetts General Hospital

Sabatine, Marc
Massachusetts General Hospital

Saito, Yoriko
Brigham and Women's, Boston

Sakoulas, George
New England Deaconess

Shaw, Stanley
Massachusetts General Hospital

Shlipak, Michael
University of California, San Francisco

Spratt, Susan
Beth Israel Hospital, Boston

Trob, Joshua
Barnes Hospital, St. Louis

Viramontes, Blanca
Mayo Graduate School of Medicine, Minnesota

**MEDICINE/PEDIATRICS**

Celi, Ann
Massachusetts General Hospital

Cheng, Paul
Massachusetts General Hospital

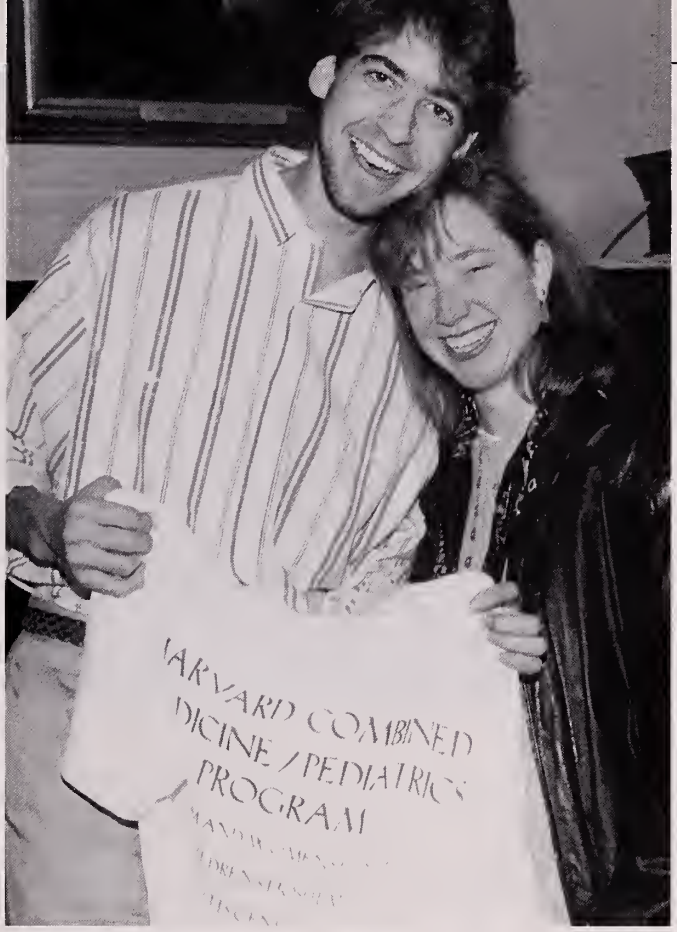
Cineas, Sybil
Massachusetts General Hospital

Nigrovic, Peter
Massachusetts General Hospital

Reilly, Andrea
Mt. Sinai Hospital, New York

**NEUROLOGY**

Shepherd, Gordon
Massachusetts General Hospital




**NEUROSURGERY**

Johnson, Mark
University of Washington, Seattle

Munshi, Hidayatullah
University of Minnesota, Minneapolis

Villavicencio, Alan
Duke University

Yanez, Paulino
Mayo Clinic, Minnesota

**OB/GYN**

Atilano, Lorraine
Brigham and Women's, Boston

Banerjee, Rini
Brigham and Women's, Boston

Caughey, Aaron
Brigham and Women's, Boston

Dojaquez, Katherine
University of New Mexico School of Medicine

Jennings, Chasity
White Memorial Medical Center, Los Angeles

McHugh, John
University of California, San Francisco

Rainford, Monique
Georgetown University Hospital

Sinnock, Kristin
Beth Israel Hospital, Boston

Wong, Suzanne
Brigham and Women's, Boston

Yen, Janie
Harbor-UCLA Medical Center

**OPHTHALMOLOGY**

Horn, Erich
California Pacific, San Francisco

Hsu, Julia
Manhattan Eye, Ear & Throat

Lit, Eugene
Massachusetts Eye and Ear

Pollack, Aryeh
Mt. Sinai Hospital, New York

Richardson, David
University of Southern California, Los Angeles

Shivaram, Sunil
University of Southern California, Los Angeles

Wald, Heidi
Wills Eye Hospital, Philadelphia

Zhang, Kang
Wilmer Institute, Baltimore

**ORAL SURGERY**

Gillardetti, Robert
Massachusetts General Hospital

Mason, Sandra
Massachusetts General Hospital

**ORTHOPEDIC SURGERY**

Battle, Melanie
Johns Hopkins Hospital

Deshmukh, Asvin
Harvard Combined Orthopedic Program

Faryniarz, Deborah
Hospital for Special Surgery

Grayzel, Jonathan
University of Massachusetts Program

Harriot, Paul
Vanderbilt University Medical Center

Miller, Bruce
Harvard Combined Orthopedic Program

Patterson, John
Harvard Combined Orthopedic Program

**OTOLARYNGOLOGY**

Hilinski, John
University of California, San Diego

Nasseri, Shawn
Mayo Clinic, Minnesota

Ralph, Walter
Duke University Medical Center

Taylor, Rodney
University of Michigan

Wang, Steven
UCLA Medical Center

**PATHOLOGY**

Chow, Yung
UCLA Medical Center

**PEDIATRICS**

Celi, Ann
Massachusetts General Hospital

Cheng, Paul
Massachusetts General Hospital

Cohen, Gail
Medical College of Virginia

Collins, Felicia
Children's Hospital, Boston

Downes, Sandra
Children's Hospital, Boston

Hirschhorn, Joel
Children's Hospital, Boston

Joseph, Jocelyn
Children's Hospital, Boston

Lesperance, Leann
Children's Hospital, Boston

Livingston, Nina
University of Washington Affiliated

Nadeau, Kari
Children's Hospital, Boston

Nigrovic, Peter
Massachusetts General Hospital

Palomino, Rossana
Baylor College of Medicine, Houston

Reilly, Andrea
Massachusetts General Hospital

Rein, Jeffrey
Mt. Sinai Hospital, New York

Shanahan, Theresa
New England Medical Center

Waskow, Shoshana
Children's Memorial Hospital, Illinois

Wood, Sarah
Children's Hospital, Boston

**PLASTIC SURGERY**

Fogaca, Marcelo
UCLA Medical Center

Manchester, Keith
University of Texas SW Medical School

Posner, Marc
University of Chicago Hospital

**PRELIMINARY MEDICINE**

Sawhney, Roger
Beth Israel Hospital, Boston

**PRELIMINARY SURGERY**

Helman, David
Massachusetts General Hospital

# Pulse

**PRIMARY CARE**

Chung, Wayne
Mt. Auburn Hospital, Cambridge

Eakin, Marion
Mt. Auburn Hospital, Cambridge

Finn, Kathleen
Brigham and Women's, Boston

Hauser, Joshua
Brigham and Women's, Boston

Lee, Frederick
Brigham and Women's, Boston

Levine, Elizabeth
Rhode Island Hospital

Olivares, Michael
Baylor College of Medicine, Houston

**PSYCHIATRY**

Chuang, Kenneth
UCLA Neuropsychiatric Institute

Cohen, Sherry
Medical College of Virginia

Gomberg, Richard
Cambridge Hospital, Massachusetts

Kirby, Janet
Longwood Program, Boston

Mazzoni, Pietro
Presbyterian Hospital, New York

Meyer, Christopher
Cambridge Hospital, Massachusetts

**RADIOLOGY**

Doty, David
New England Deaconess

Kundra, Vikas
Brigham and Women's, Boston

Lee, ChenWei
Massachusetts General Hospital

Leung, Gordon
Massachusetts General Hospital

Martinez, Camilo
UCLA Medical Center

Schlakman, Jonathan
Massachusetts General Hospital

**SURGERY**

Gawande, Atul
Brigham and Women's, Boston

Hirmand, Mohammad
Emory University School of Medicine

Howard, Marissa
Emory University School of Medicine

Hutter, Matthew
Massachusetts General Hospital

Kosowsky, Jeffrey
New England Deaconess

Lee, Richard
Massachusetts General Hospital

Lin, Richard
University of California, San Francisco

Schwarze, Margaret
Massachusetts General Hospital

Tolis, George
Massachusetts General Hospital

Wolfe, Roger
University of Chicago Hospital

Yen, Tina
University of Washington Affiliated

**UROLOGY**

Chan, David
Brady Urological Institute, Baltimore

Mitchell, Michael
Harvard Medical School

Niknejad, Kathy
Harvard Medical School

Raut, Chanrajit
Massachusetts General Hospital

**OTHER**

Callahan, Tamara
Public Service Fellowship
Echoing Green Foundation

Costenbader, Karen
Research Fellowship, Paris

Lin, Herbert
Research Fellowship, Massachusetts General Hospital

Rosario, Vernon
Research Fellowship, Humanities Research Institute, University of California, Irvine

Cunningham, Miles
Medical Portfolio Management, Cambridge

Ito, Keita
Research Fellowship, AO/ASIF Research Institute, Switzerland

# On the Quadrangle

**New Academic Track for Clinician Scholars**

Three great physicians, who practiced in the 1950s and 1960s—Paul Dudley White, Samuel Levine and Claude Welsh—created a supreme standard for the practice of medicine at Harvard Medical School and its affiliated hospitals. They held part-time faculty appointments as clinical professors of medicine. In order to recognize and reward the next generation of great clinicians—those who, as David Nathan '55, Robert A Stranahan Professor of Pediatrics, says, "approach" or "equal" the standard of these three and who practice full time in an HMS-affiliated hospital—the school has established a fourth professorial track: the clinician scholar.

"The major focus of the clinician scholar ladder," says Mary Clark, associate dean for faculty affairs in the faculty of medicine, is to recognize the clinicians who are "the ultimate role model for the students; those who all people recognize as the best doctor, the 'doctor's doctor'."

The clinician scholar track, which was formally adopted in March of this year, becomes the fourth academic track at the school, alongside laboratory investigator, clinical investigator, and teacher clinician, which was established in 1989. Unlike the two investigator tracks, the emphasis in the clinician scholar track will not be to produce new knowledge, but to perfect and maintain one's own clinical skills and to impart that knowledge onto students, residents and fellows. The new track, says Clark, will allow the school to recognize "the scholarship of transmission as well as the scholarship of discovery."

The fundamental mission of the hospitals is caring for patients and good clinicians are an integral factor in that pursuit. With hospital mergers and the advent of clinical care networks, the responsibility to maintain Harvard Medical School's preeminence not just in medical research, but also in patient care, needed to be reconfirmed. Thus, the desire to keep excellent full-time clinicians on staff prompted Nathan to discuss the idea of a new track with colleagues Robert Glickman '64, Eugene Braunwald, John Potts, Gerald Austen '55 and William Silen. A proposal was then made to Dean Daniel Tosteson '49, who appointed an ad hoc committee in July 1992, which Nathan chaired. The committee returned its recommendation for a clinician scholar track in December 1993.

Much debate ensued during consideration of this proposal about about whether the word "clinical" should be in the titles of faculty appointed to the track. "Two different schools of thought emerged and both camps felt very fervently," says Clyde Evans, associate dean for clinical affairs. One group felt that one's clinical designation should remain in his or her academic title—harkening back to the titles of the fore-mentioned clinicians, whose spirits guide this track—while others felt very strongly that no distinction should be made among the ranks of full-time professors at the school, so as not to reduce the clinical track to one for second-class citizens.

Nathan comments: "Those of us who conceived the idea thought that we were trying to create even more first-class citizens. We think there is a great distinction in that title."

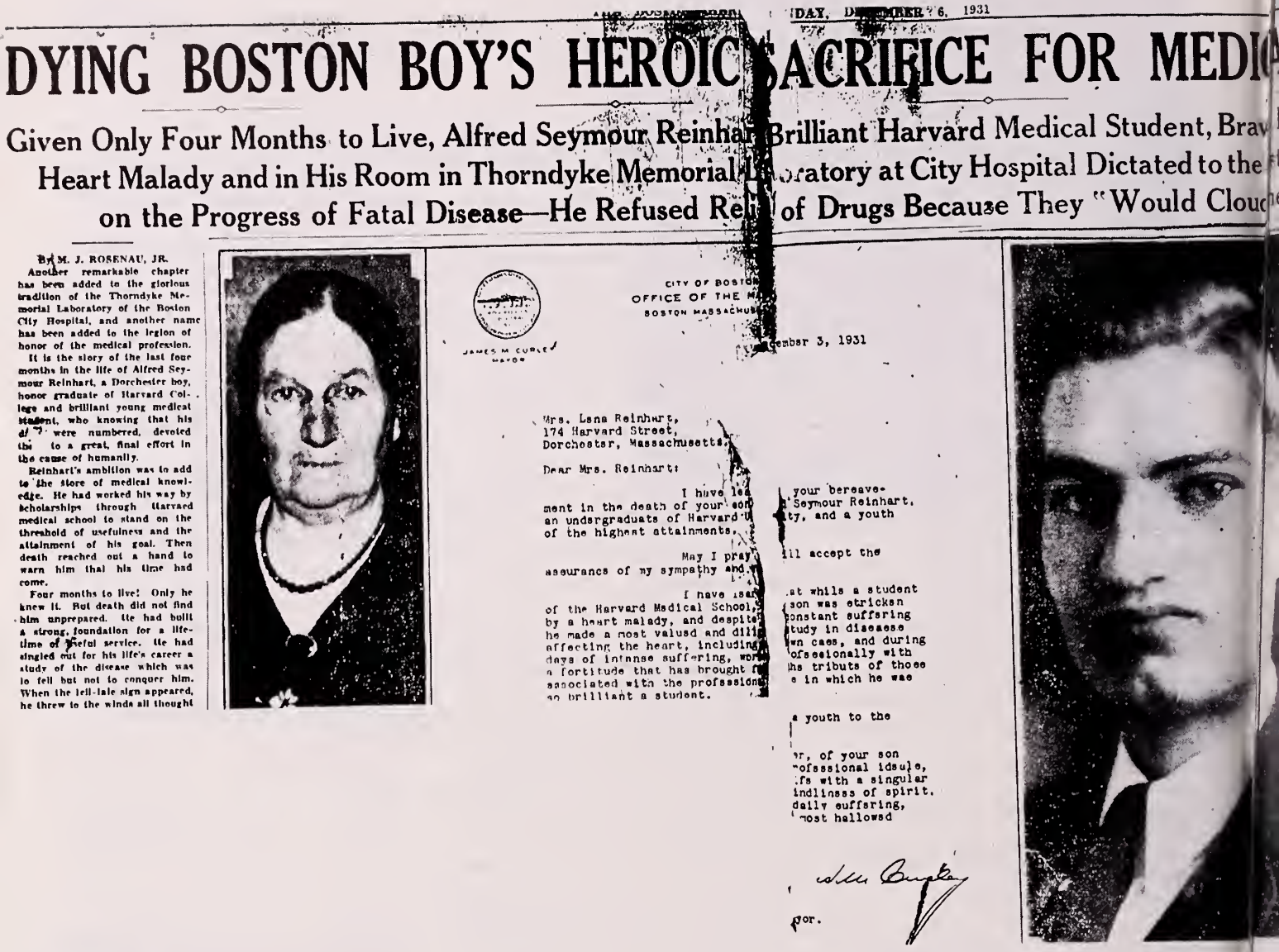
Finally determined, appointees to the new track will be named assistant and associate professors of clinical (discipline), while those who attain the top rank will hold the title of professor, without the clinical distinction.

"A professor at HMS should have reached such a level of attainment that there would be no reason for differentiation," says Evans.

To maintain its role as a scholarly ladder, those holding positions in this track will be required to produce a record of their work through publication of clinical observations, case reports, analytic studies, chapters and textbooks. The requirement does allow some flexibility in the means of dissemination of clinical expertise, however, as audiovisual presentations would also be acceptable.

Appointments to assistant professor of clinical (discipline) will be proposed for a three-year term; associate professor for five-year terms; and professor, as the other tracks, will be a permanent, tenured appointment. Because of the high standards of this position, it's expected the number of professors appointed to this track will be low, say Clark and Evans.

*Terri L. Rutter*



DAY, DECEMBER 6, 1931

DYING BOSTON BOY'S HEROIC SACRIFICE FOR MEDI

Given Only Four Months to Live, Alfred Seymour Reinha Brilliant Harvard Medical Student, Brav
Heart Malady and in His Room in Thorndyke Memorial ratory at City Hospital Dictated to the
on the Progress of Fatal Disease—He Refused Re of Drugs Because They "Would Cloud

By M. J. ROSENAU, JR.

Another remarkable chapter has been added to the glorious tradition of the Thorndyke Memorial Laboratory of the Boston City Hospital, and another name has been added to the legion of honor of the medical profession.

It is the story of the last four months in the life of Alfred Seymour Reinhart, a Dorchester boy, honor graduate of Harvard College and brilliant young medical student, who knowing that his d[illegible] were numbered, devoted thi[illegible] to a great, final effort in the cause of humanity.

Reinhart's ambition was to add to the store of medical knowledge. He had worked his way by scholarships through Harvard medical school to stand on the threshold of usefulness and the attainment of his goal. Then death reached out a hand to warn him that his time had come.

Four months to live! Only he knew it. But death did not find him unprepared. He had built a strong foundation for a lifetime of useful service. He had singled out for his life's career a study of the disease which was to fell but not to conquer him. When the fell-late sign appeared, he threw to the winds all thought

CITY OF BOSTON
OFFICE OF THE M
BOSTON MASSACHUS

JAMES M CURLEY
MAYOR

[illegible]ember 3, 1931

Mrs. Lena Reinhart,
174 Harvard Street,
Dorchester, Massachusetts.

Dear Mrs. Reinhart:

I have lea[illegible] your bereave-
ment in the death of your son [illegible] Seymour Reinhart,
an undergraduate of Harvard U[illegible]ty, and a youth
of the highest attainments.

May I pray [illegible]ill accept the
assurance of my sympathy and [illegible]

I have learned that while a student
of the Harvard Medical School, [illegible]son was stricken
by a heart malady, and despite [illegible]constant suffering
he made a most valued and dili[illegible]tudy in diseases
affecting the heart, including [illegible]wn case, and during
days of intense suffering, wor[illegible]ofessionally with
a fortitude that has brought [illegible]his tributs of those
associated with the profession[illegible]e in which he was
so brilliant a student.

[illegible] a youth to the

[illegible]r, of your son
[illegible]ofessional idols,
[illegible]fs with a singular
[illegible]indliness of spirit,
[illegible] daily suffering,
[illegible]most hallowed

[illegible]gor.

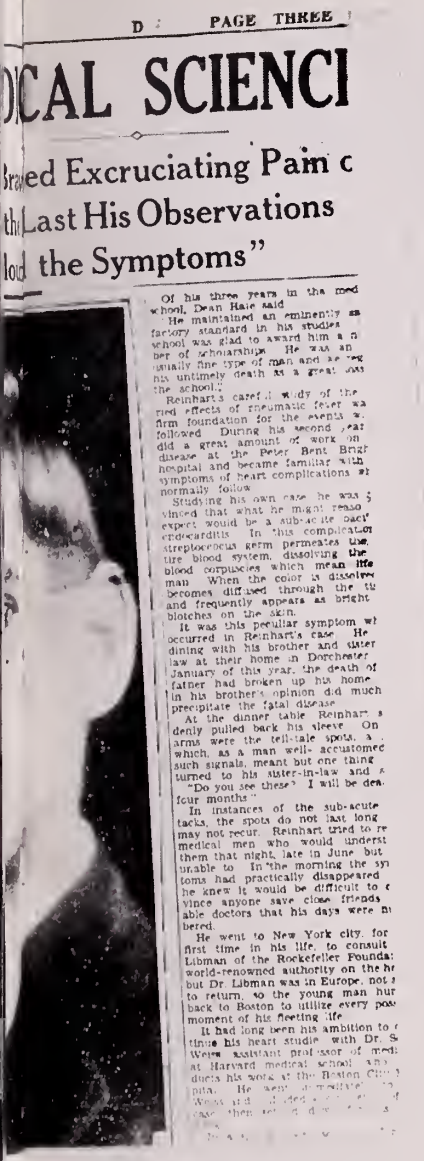
# Diary of a Fatal Illness

*by Burton I. Korelitz*

YOU MIGHT WONDER WHY I, A GASTROENTEROLOGIST, am presenting the story of Alfred Reinhart, who lived with and died of a cardiac disease at age 24. I will explain this later.

In 1942, as a medical student in Boston, I had read an article in the *Journal of the Mount Sinai Hospital* by Soma Weiss, professor of medicine at Harvard Medical School, entitled "Self-Observations and Psychological Reactions of Medical Student A.S.R. to the Onset and Symptoms of Subacute Bacterial Endocarditis." I had been touched by these observations about the short life of this brilliant medical student, who just a few years later might have been saved by sulfonamides and penicillin.

Weiss, who was Alfred S.



D PAGE THREE

CAL SCIENCI

ed Excruciating Pain c
Last His Observations
the Symptoms"

Of his three years in the med
school, Dean Hale said
"He maintained an eminently sa
factory standard in his studies
school was glad to award him a n
ber of scholarships. He was an
usually fine type of man and we reg
his untimely death as a great loss
the school."
Reinhart's careful study of the
ried effects of rheumatic fever wa
firm foundation for the events w
followed. During his second year
did a great amount of work on
disease at the Peter Bent Bright
hospital and became familiar with
symptoms of heart complications as
normally follow.
Studying his own case he was s
vinced that what he must reaso
expect would be a sub-acute bacte
endocarditis. In this complicatio
streptococcus germ permeates the
tire blood system, dissolving the
blood corpuscles which mean life
man. When the color is dissolved
becomes diffused through the ti
and frequently appears as bright
blotches on the skin.
It was this peculiar symptom wh
occurred in Reinhart's case. He
dining with his brother and sister
law at their home in Dorchester
January of this year, the death of
father had broken up his home
in his brother's opinion did much
precipitate the fatal disease.
At the dinner table Reinhart s
denly pulled back his sleeve. On
arms were the tell-tale spots, a
which, as a man well- accustomed
such signals, meant but one thing
turned to his sister-in-law and s
"Do you see these? I will be dea
four months."
In instances of the sub-acute
tacks, the spots do not last long
may not recur. Reinhart tried to re
medical men who would underst
them that night, late in June, but
unable to. In the morning the sy
toms had practically disappeared
he knew it would be difficult to c
vince anyone save close friends
able doctors that his days were n
bered.
He went to New York city, for
first time in his life, to consult
Libman of the Rockefeller Founda
world-renowned authority on the hr
but Dr. Libman was in Europe, not s
to return, so the young man hur
back to Boston to utilize every pos
moment of his fleeting life.
It had long been his ambition to c
time his heart studies with Dr. S
Weiss, assistant professor of medi
at Harvard medical school, and
ducts his work at the Boston City
pital. He went to Weiss
Weiss and
case, then

Reinhart's preceptor, wrote in his introduction that, "much has been written on the bacteriological and immunologic aspects and on the post mortem findings in Subacute Bacterial Endocarditis, but the symptoms have received surprisingly little consideration. It is indeed a rare opportunity in any disease to obtain an intelligent and complete story with subjective sensations well related to objective findings. Alfred S. Reinhart was a fourth-year student in the Harvard Medical School and a young man of exceptional ability. It is hoped that physicians may read with profit this record of his keen self-observations with its philosophical remarks, written during the course of a disease which he recognized as hopeless."

The following quotations come from the published paper and the original unpublished notes of Soma Weiss. Reinhart's remarks are interspersed with comments of my own obtained from a variety of sources. Reinhart wrote:

"Dr. Weiss has generously loaned me the services of a Hospital Secretary for several minutes every day. It is my plan to spend these minutes on the evolution of a generally fatal disease, and my design is to constitute observations on its natural history and course including memoirs of the subjective reactions of a patient to that disease. The pathogenesis of a disease must be sought usually in the records or reactions long antedating the immediate symptomatology. In this regard, I must look for the genesis of the present disease at least ten years back to the time I was afflicted with chorea and rheumatic fever with resulting damage supposedly only to the aortic valve. The fact that the only or principle lesion was aortic is, of course, of significance in the understanding of later events. Aortic regurgitation, as is well known, carries with it a syndrome of hemodynamic phenomena, which are among the most striking in the entire field of physical diagnosis.

"For ten years now, I have carried a blood pressure ranging on the average of 160 systolic and 0 diastolic, a fact, which translated into physical emotions means, especially when we consider the existence of the cor bovinum of aortic insufficiency, that every ventricular systole is sensed by the patient with no effort on his part. The physical discomfort of being forced to experience every ventricular systole over a long period of years is not to be underestimated, and I had often felt willing to sacrifice many things in order to feel again how it was to be able to live without feeling my heart beat. With this physical and psychological handicap, I was able to complete perhaps with a better than the average degree of success, school, college, and three-fourths of medical school."

*I had been touched by these observations of this brilliant medical student, who just a few years later might have been saved by sulfonamides and penicillin.*

Who was Alfred Reinhart? His parents emigrated from Eastern Europe in the late 1800s and settled in Boston where all three of their children were born, the oldest in 1898 and Alfred, the youngest, in 1907.

Reinhart graduated from grammar school at 11, after receiving several double promotions. He was bar mitzvahed at 13, but a year later developed St. Vitus's Dance and was admitted to the Peter Bent Brigham, where he could not be held down and was treated with ice cold showers. His family doctor warned that he might not live overnight. This presumably was the onset of his rheumatic fever.

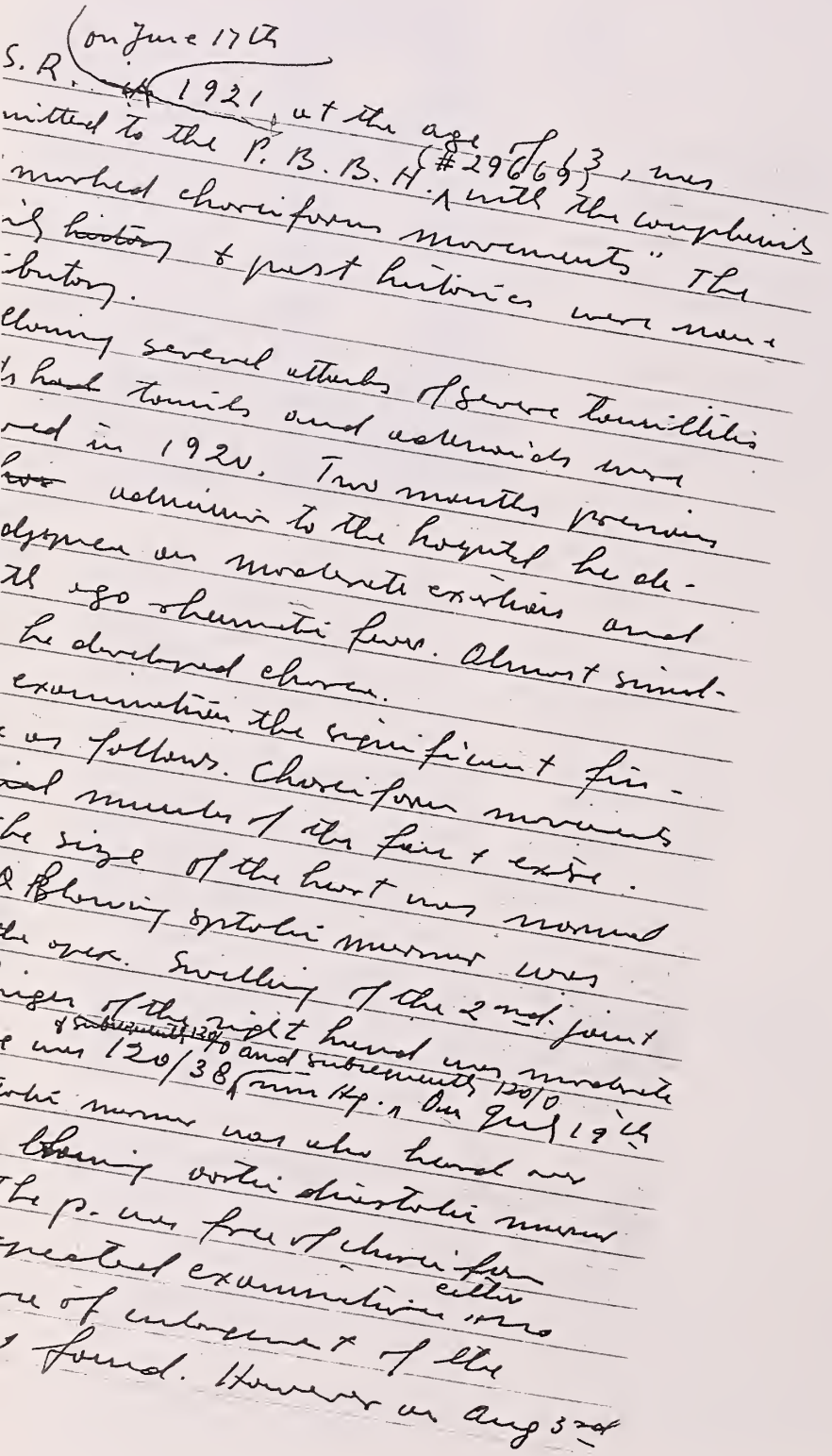
He lost a year of school because of illness, but his mind didn't stop working and he read and absorbed information on many topics. He entered English High School, where he continued to excel. Though he was not robust, he remained well for the next five years.

He was admitted to Harvard College in 1924 at age 17 and majored

in government and English. His main interests were law and writing and one of his articles was published in the *Michigan Law Review*. He was appointed an assistant literary editor of the *Boston Transcript* and supported himself during college by writing book reviews. As he approached graduation, influenced by his own illness and impressed with how little was known about it, he decided to switch his major and apply to medical school.

He entered Harvard Medical School in 1928 and, until the fall of 1931, was able to actively participate. He moonlighted as a subintern, made

*"I was trying to study medicine and each known fact literally seemed to be hammered into my head by a cannon."*



house calls on charity patients, and found time to do laboratory research. He even wrote a paper on the origins of rheumatic fever, which was published in 1931 by the *New England Journal of Medicine*. During his three years of medical school, he acquired the medical acumen to understand his own case:

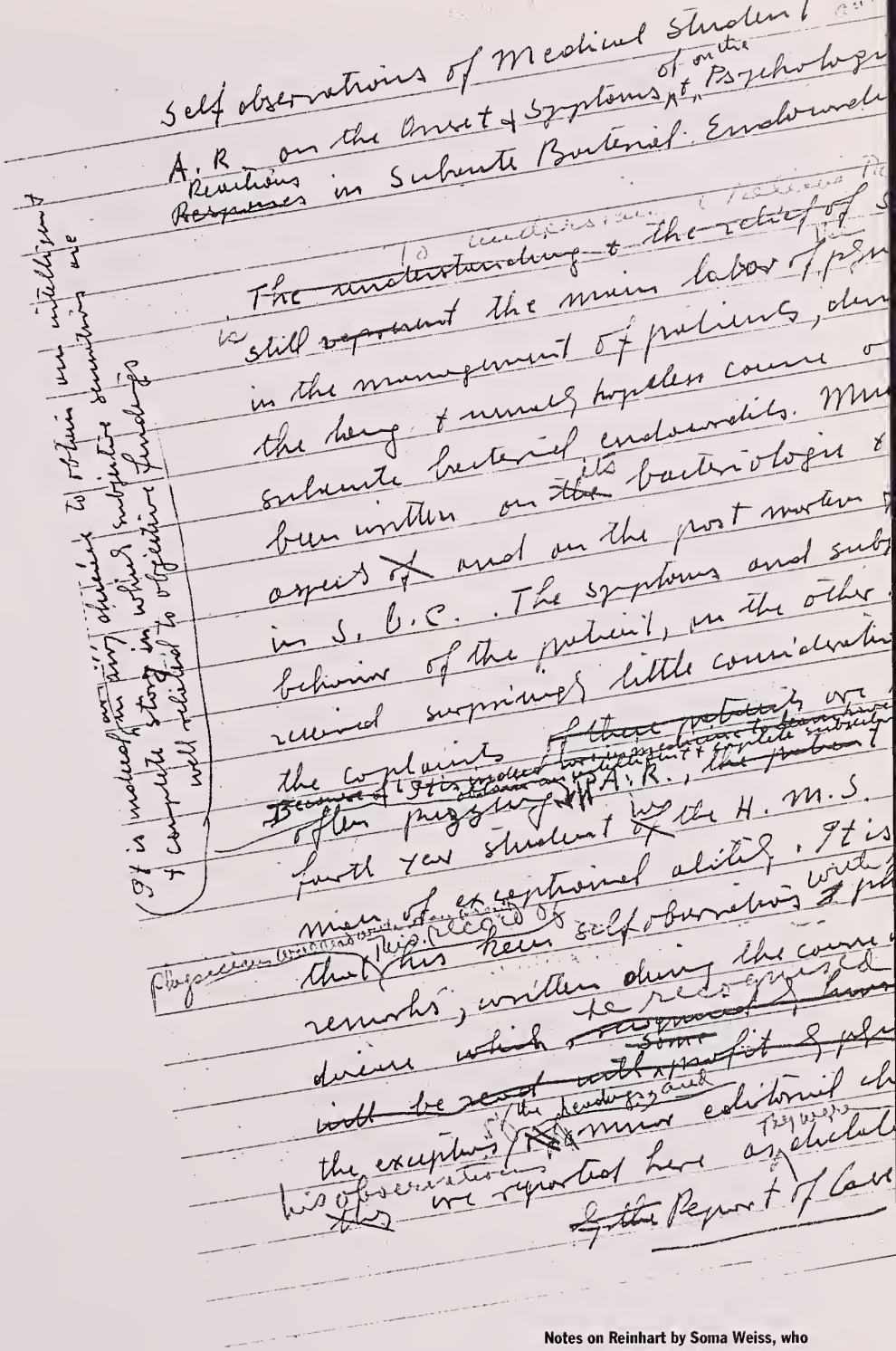
> "There began to shape themselves in my mind three fears relative to my ultimate fate, which albeit, I had not usually looked on before as being very near. I know there were always three octopi ready to grab me in their tentacles at the first feasible opportunity: 1) a recurrence of Rheumatic Fever, 2) cardiac decompensation, for I was leading a very active life, and 3) subacute bacterial endocarditis."

Subacute bacterial endocarditis first entered his mind in January 1931, out of both his knowledge that it was possible and his subjective feeling of fullness in the right upper quadrant, particularly when taking a hot bath. He also noted early clubbing of his fingers.

> "I thought the wisest policy would be to consult those who knew more about medicine than I did, and I was referred to the office of Dr. A who found no signs of subacute bacterial endocarditis."

"I subsequently learned from the unpublished notes of Soma Weiss that Dr. A was Samuel Levine, the famous cardiologist. Reinhart did well until May 1931, when while running across the street to avoid an oncoming automobile, he experienced a "procession of extrasystoles unprecedented in their frequency. The condition grew worse, study and even sleep became impossible, and life itself was almost intolerable. I was trying to study medicine and each known fact literally seemed to be hammered into my head by a cannon. The only relief that I could devise was getting up at night and walking around, thus increasing the heart rate.

"With two of my National Board examinations yet to be taken, at approximately quarter to twelve, I remember distinctly getting up from my chair, removing the left arm of my suit coat, and there on the ventral aspect of my left wrist was a sight which I shall never forget until I die—fifteen or twenty bright red, slightly raised hemorrhagic spots about one millimeter in diameter which did not fade on pressure and which stood defiant, as if they were challenging the very gods of Olympus. There was no mistaking the sign; it only had to be read. I calmly said to my sister-in-law, who was standing nearby: I shall be dead within six months."



**Notes on Reinhart by Soma Weiss, who coincidentally died of a cerebral hemorrhage, which he diagnosed himself.**

Reinhart called Levine, whom he knew personally, but Levine was out of town at a convention. He then called "Dr. B," who, from Weiss's notes, I learned was Herrman Blumgart, director of medicine at the Beth Israel Hospital, another of Reinhart's preceptors; he too was at the convention. Eventually Reinhart regained his composure and tried to sleep.

In the morning the spots were not so red. Their disappearance and the lack of reappearance proved to be a little embarrassing in later weeks when discussing their significance with fellow students and house officers. "This must impress the medical clinician of the difficulty of eliciting accurate histories from even the most intelligent of patients," commented Reinhart.

Reinhart would see red streaks on his fingers come and go.

He then had blood cultures and skin tests. The streptococcal skin tests were all highly positive except for the streptococcus viridans (the organism associated with subacute bacterial endocarditis), which was considered neutral. Since fully positive tests were considered "immunity," the results were regarded as favorable, almost excluding subacute bacterial endocarditis. But as clinicians later learned,

this was just another instance in which the laboratory was not king.

Reinhart was scheduled to start fourth-year surgery at the Massachusetts General Hospital and he also had an appointment with Weiss, whom he was going to assist as a tutor. Because of the pressure of his circumstances, he postponed both. He borrowed $100 from his brother-in-law and took a trip to New York.

> "Incidentally, during a trip to New York which lasted almost two weeks, I gained several pounds in weight despite the fact that I was very active during the entire time, and secondly I met a young lady with whom I became quite familiar. Unfortunately, I learned of the death of a school classmate from subacute bacterial endocarditis and the details of his terminal events. Despite this I think I never spent any two such enjoyable weeks in all my life as I spent in New York, and returned to Boston feeling a much fuller man from the sights I had seen, the places I had visited, the people I had met, etc.
>
> "On Wednesday, with the kindness of the Surgical Resident of the Massachusetts General Hospital and with the courtesy of the staff, I began my fourth-year surgery and enjoyed it."

At the end of the second week of surgery Reinhart noted soreness in the back of his knee, which he attributed to standing in the operating room. While walking up the hill from Cambridge Street to Bowdoin Square, he started to limp. He left the hospital that day at 7:00 PM (early for him) and was barely able to reach his home, which was in walking distance from the streetcar stop. His family doctor made a diagnosis of rheumatic fever, but Reinhart observed that his knee was not red, swollen or hot. Nevertheless, he accepted a heavy dose of aspirin and oil of wintergreen packs; they were not helpful.

*"I have freed myself from God knows what, merely by breathing out the last drop of breath that was in me."*

After a week, Levine came to see him at home; he too made a diagnosis of rheumatic fever and advised hospitalization. Reinhart expressed his fear of subacute bacterial endocarditis but Levine reassured him.

According to Reinhart, the house officer at the Peter Bent Brigham took his history, asked for the chief complaint and Reinhart replied, "subacute bacterial endocarditis," to which the intern and the resident laughed.

> Treatment was an "anti-rheumatic regimen with Salicylates and Bicarbonate to the extent of one gram of each per hour until I should hear Cathedral bells ringing in my ears. When there was no response, the possibility of infectious arthritis was also raised. On this basis a second blood culture was taken and my fate was sealed. The green-producing streptococcus was found on the culture medium, and the diagnosis was now unfortunately confirmed.
>
> "Dr. Levine and Dr. D. approached my bed with sober faces. Before, I could always find a leeway out, however untenable, but now I was confronted with the dictum ultimatum from which there was no escape. I calmly accepted the news and in return proposed the idea of going to Rockefeller Institute as a patient for experimental investigation. By this plan I had nothing to lose, possibly something to gain, and in any case, science would be the benefactor."

As fate would have it, Homer Swift was away on vacation, as were the other leading physicians at Rockefeller Institute. Reinhart stayed in Boston. He was treated with Pregl's solution, an iodine-containing preparation used intravenously at daily intervals for three or four days. His temperature did seem to come down, but then he had the first of his splenic infarcts.

> "As I look back on this therapeutic procedure it seems only logical that it should be a failure, for even though the blood stream was sterilized for a day or more, as soon as the drug was out of the system the original focus would become active again, and the disease takes its rational course. Dr. D. then tried intravenous solution of sodium cacodylate. This was followed by polyvalent anti-streptococcus serum, which, since the skin test for sensitivity was highly positive, required desensitization—which I was willing to submit to despite the risk of serum sickness and lack of success. By this time, I was quite reconciled to my fate—I am entirely sincere when I say that I sought new treatments not in any serious endeavor to cure the disease or prolong my life but truly to satisfy that something be done."

Reinhart wrote about the daily attempts at intravenous infusion by the house officer; often four or five attempts were necessary. "It was a very discouraging procedure for me to have to submit to this torture every day, but I never muttered a word in protest, knowing so well how little effective protest would be under the stringent principles of ethics which pervade our profession."

Perhaps his most dramatic description concerned his own splenic infarcts

occurring in the course of subacute bacterial endocarditis. He questioned whether the older clinicians such as Osler and Janeway, who had stated that infarcts occurred with indescribable suddenness, were correct.

Reinhart wrote: "It is my impression its onset was anything but vitally acute. At approximately midnight I noticed that it was slightly uncomfortable for me to lie on my left side without any localization. One or two hours later it became uncomfortable to be on my back, at three o'clock I was generally uncomfortable and at four o'clock I was sitting up in bed in distress. The nurse wanted to call the house officer, but I asked her not to. At five o'clock the pain in the left upper quadrant became intolerable and I requested assistance.

"Every so often in our daily social contacts, we are overtaken by some remark or deed which we cannot fathom or understand. It was just such a statement which greeted my ears at this time. Whether through sheer indiscretion or through some personal factor, which I did not understand, the night nurse informed me that the doctor's reply to my request for assistance was: 'Tell Mr. Reinhart that, if he is going to get embolic phenomena, to get them at a more earthly hour.' (The house officer did later come and apologize.)

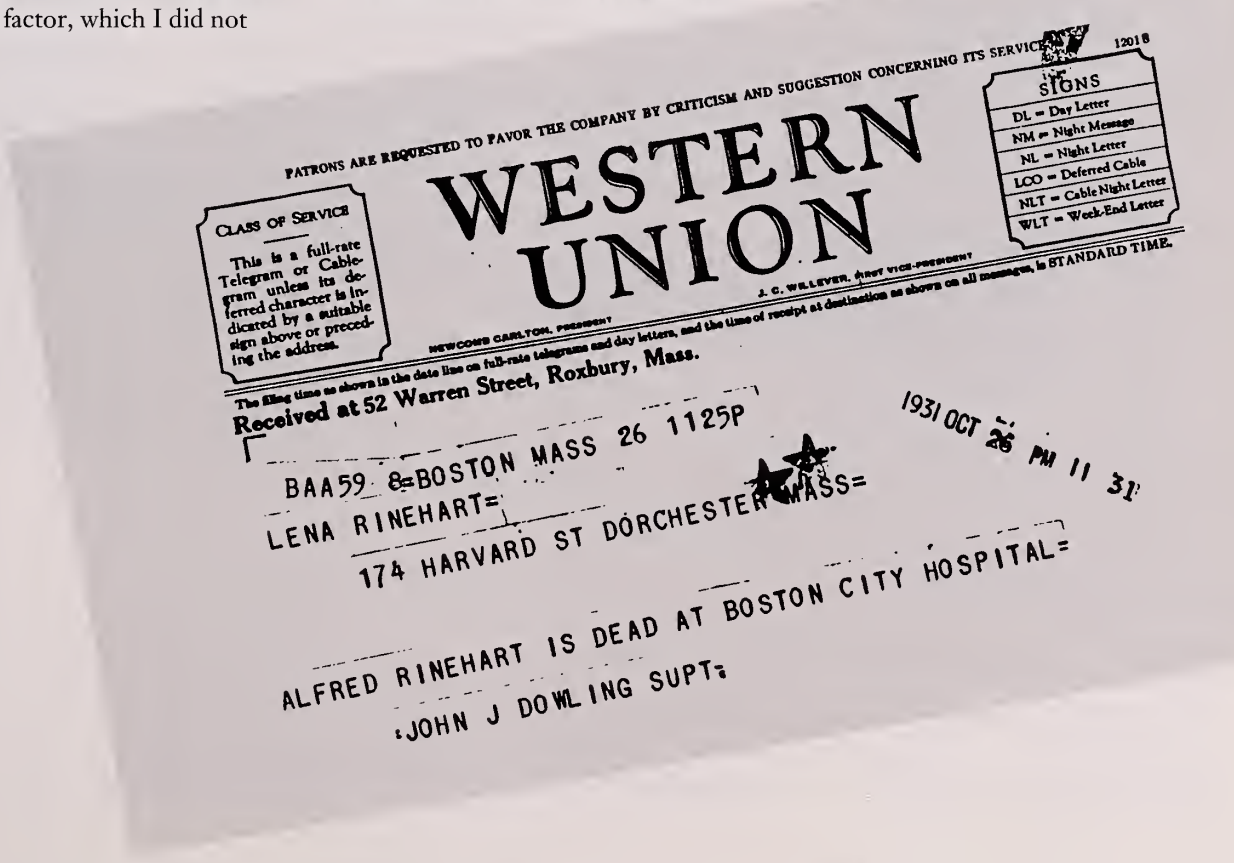
"The only other important possibility for my pain was a renal infarct which I feared inestimably more than a splenic infarct. I could not have many qualms about losing a few cubic centimeters of an organ, which physiologists have never found too much use for, but the prospect of renal infarct brought up within me visions of uremia, convulsions and coma."

The second splenic infarct was much worse "and it was comforting to me in my agony that I had such medical and nursing service at my immediate call as I should require. It seemed to me that the pain in the spleen is intensified not only by lying in any direction but by drinking fluids—even the slightest distension of the stomach causing pressure on the already sensitive spleen."

Reinhart then accepted morphine and observed that it was just as effective taken orally as parentally. He felt his reaction to the drug was somewhat paradoxical in that he had none of the pleasant subjective reactions as one supposed, and "I have experienced no sensation or other reaction which would urge me to seek its fruits again."

About his extrasystoles, he wrote: "It has always affected me as if a cannonball, shot point blank at my brain, like a terrific explosion occurring within the narrow and limited confines of a calcified skull which refuses to yield to the compressing force. I had even at times attempted the very dangerous exploit of exerting double vagal pressure against all the advice of famous clinicians, but this pressure neither killed me nor stopped my attack of paroxysmal tachycardia."

Only a deep inspiration would help, but he was also having splenic infarcts,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1931 OCT 26 PM 11 31

BAA59 8=BOSTON MASS 26 1125P
LENA RINEHART=
174 HARVARD ST DORCHESTER MASS=

ALFRED RINEHART IS DEAD AT BOSTON CITY HOSPITAL=
JOHN J DOWLING SUPT=

*No classes were held at Harvard Medical School on the day of his funeral.*

the pain of which was markedly accentuated by the inspiration. He solved it by forced expiration, and wrote: "I have freed myself from God knows what, merely by breathing out the last drop of breath that was in me."

Alfred Reinhart died soon thereafter, on October 31, 1931, at the Thorndike Memorial Laboratory of Boston City Hospital. He had related every symptom of his illness until two days before his death. No classes were held at Harvard Medical School on the day of his funeral.

A letter from Mayor James Curley was published along with Reinhart's story in the *Boston Herald*. Editorials appeared across the country, including the *New York Times*, with captions and statements of many varieties:

- "Because of his great love for Medicine and his desire to be of service to mankind, he, himself knowing that his death was imminent, planned the minute details concerning his autopsy with the professor of pathology at Harvard Medical School." (*Boston Herald*)
- "His grasp of the immediate problem was perfectly amazing, and his knowledge of all the literature bearing on a point was always at his finger tips." (Soma Weiss)
- "His thoughts were inspirations, his mind was romantic with imagination." (a Boston newspaper)

Condolences arrived from friends, classmates, teachers and strangers who had read about his case. One of the most beautiful came from Weiss, who wrote: "After his death, I went over his notes with particular care and was more impressed than ever by his keen observations and ability." Levine wrote: "I would be proud to have a son of his sort and his purpose in life."

At the 60th reunion of Reinhart's Harvard Medical School class in 1992, classmate Seebert J. Goldowsky said:

"In the spring of 1932 Harvard Medical School sent out into the world 120 ambitious starry-eyed fledgling doctors. We should not forget the bright young classman, who shall always remain young, Alfred Seymour Reinhart, who tragically passed away during our fourth year of a disease he would now survive."

From his death bed at Thorndike Memorial, Reinhart wrote this letter to his nephew:

*Jason my Love—*

*To you I leave my watch, which Grandpa gave me, and my Phi Beta Kappa Key, which you will keep as a lifelong remembrance.*

*I leave you also my library in your house now.*

*I hope you will live long and keep well, that you will go through school and college and try by all means to go to Medical School. If you can go to Harvard, my record may possibly do you some good, although in your time there will probably be few to remember me.*

*Remember your Parents and your Health above all things. Obey, honor, love, respect your father and mother and you will be honored and respected by all.*

*Do not forget by any means to get at least one or two good vacations a year. This is especially true as you grow older and older.*

*Be also devoted and loving and respectful to your parents' other children.*

*Be kind to people and be truthful and honest at all times.*

*As the first of my nephews I love you as I could love few people and I hope you will live in a way to merit my hopes for you.*

*Uncle Alfred*

Alfred's mother lost her husband that same year and came to live with her daughter, Ada, in Lawrence, Massachusetts.

That daughter was my mother, Ada Reinhart Korelitz, born in 1900 and still alive and well. Jason, who received the deathbed legacy, was my older brother; he devoted his professional life to journalism. I was the second son, five years old at the time of my uncle's death, his legacy was not intended for me, but I received it nonetheless and took it deeply to heart.

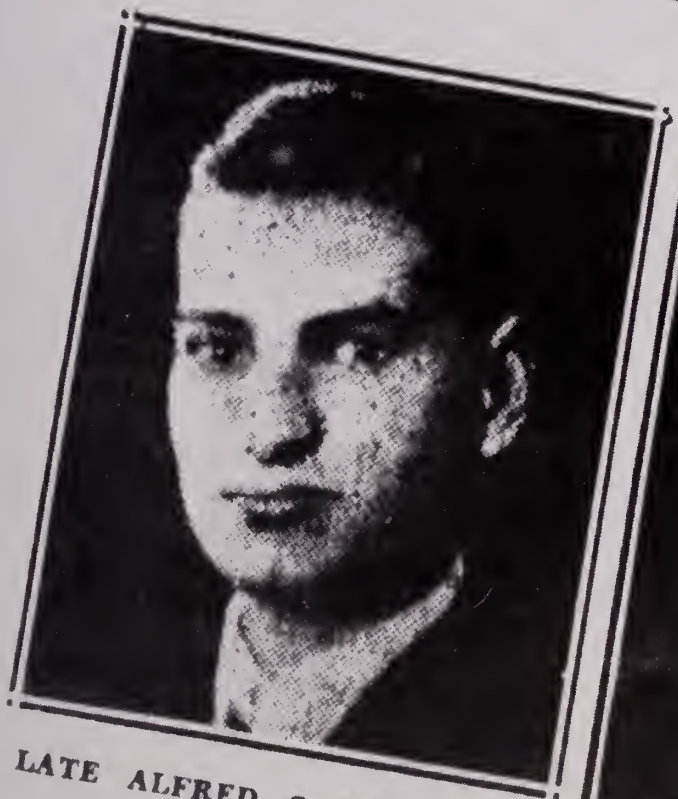
Throughout my professional life, I have kept my uncle's photograph on my desk, next to those of my parents, wife and daughters. Alfred's legacy has been a source of enduring inspiration. I will always be grateful beyond words to my grandmother, my mother and Uncle Alfred for instilling in me early a passionate desire to become a physician, a profession which has provided me with profound fulfillment and endless satisfaction.

*Burton I. Korelitz is chief of the Section of Gastroenterology at Lenox Hill Hospital in New York and clinical professor of medicine at the NYU School of Medicine.* *He would like to acknowledge the following people who assisted him in researching this article: Seebert Goldowsky '32, Edward Budnitz '32, Claude Welch '32, Harold Levine, Richard Wolfe, Nora Nercessian and Herrman Blumgart (who in 1953, when Korelitz was a Dana fellow in gastroenterology at the Beth Israel Hospital, sat with him for two hours relating his recollections).*

THE EVENING TRIBUNE—LAWRENCE, MASS.

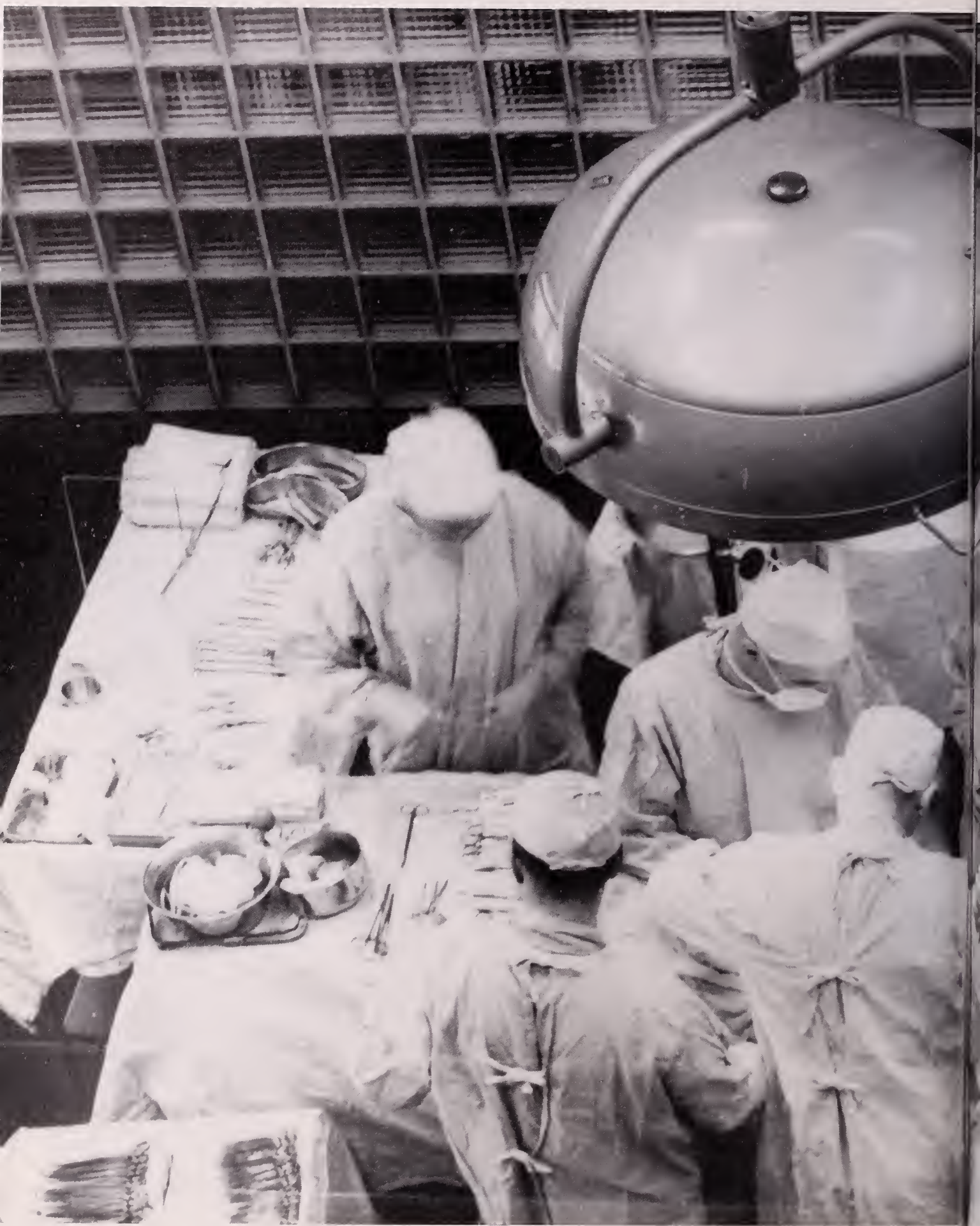
# YOUNG REINHART SUFFERS MUCH FOR MEDICAL SCIENCE

## Martyr, Whose Sacrifice That Others Might Benefit, Has Sister In Lawrence and Was Frequent Visitor Here



LATE ALFRED S. REINHART

MRS. SAMUEL KORELITZ.



# Transplantation

## *Early events in the history of transplantation as related in* A Miracle & a Privilege

*by Francis D. Moore*

### Rejection, the Twins, and Radiation

(1950-1961)

Organ transplantation came to our department—or rather, patients in our department came to transplantation—on March 31, 1951. On that day David Hume transplanted a perfectly healthy normal kidney (which had to be removed from its host because of nearby cancer) into a 37-year-old man suffering from chronic kidney infection with severe high blood pressure and advanced renal failure. His demise was imminent. The donor kidney was sutured into place in the left renal fossa (the normal position of a left kidney). Its blood vessels were joined directly to the blood vessels of one of the patient's nonfunctioning kidneys, both of which were removed. After the transplant he was treated with adrenocorticotropic hormone (ACTH) to stimulate his adrenal glands and with heparin to prevent clotting, as well as the male hormone testosterone and antibiotics. Even so, the operative incision became infected. The kidney never functioned satisfactorily, and the patient died of renal failure on the 37th postoperative day. In present-day parlance, this would be referred to as a "random, unmatched, living donor kidney, in the orthotopic position without immunosuppression, rejected." Immunosuppressive drugs to prevent rejection were still unheard of (but in fact were only 8 years away). None was used here.

The David Hume Series

The significance of this operation lay in the fact that it was the first ever to be performed for kidney transplantation according to a carefully planned research design, in which a

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Excerpted here from *A Miracle & a Privilege: Recounting a Half Century of Surgical Advance* are portions of Chapters 19, 20 and of Chapter 31, telling the story of Joseph Murray receiving the Nobel Prize in Stockholm in 1990. Reprinted with permission of Joseph Henry Press of the National Academy of Sciences, Washington, D.C., 1995.

surgical department committed to this study was joined to a medical department that included some of the world's experts in kidney disease and, again for the first time, with the availability of an artificial kidney. All this in a university teaching hospital equipped with top-flight consultants and a superb pathology department under Gustave J. Dammin, who was destined to become the world leader in the pathology and microscopic appearances of organ transplantation.

This particular operation had another unique feature. It was one of the few kidney transplants in which the organ was placed in the normal position of the kidney, alongside the aorta and the vena cava. Such a position for a transplanted kidney is anatomically difficult and surgically almost inaccessible. Only someone with the determination of David Hume could and—encouraged by me as his chief—would undertake such a procedure. The lesson was learned. No more kidneys were put there, even though that was where they ordinarily lived and seemed to belong.

Only 23 days later the second patient of this group was operated upon. Again, the patient had no significant kidney function. The donor, however, had suffered from high blood pressure. This time the new kidney was placed on the patient's right thigh, its artery joined to a branch of femoral artery (the main artery to the leg) and its vein joined to a vein of the leg. The ureter (draining conduit for the urine) was brought out through the skin. This same technique, developed by Dr. Hume, was used in the remaining patients of this series. . . .

George Thorn and I had planned this series of procedures (dialysis and transplants) together and had asked David Hume to carry out the operations because of his experience with experimental kidney transplantation in the dog and his enthusiasm, surgical ability, and remarkable determination. The ethical basis for such a human experiment lay in only two components: first, the patients selected were going to die shortly unless they could get a new kidney, and second, this experiment was being undertaken under the most ideal and favorable circumstances, with conscientious recording of every detail and the availability of the artificial kidney as standby.

Whatever the merit of this series of patients might be, whatever criticism we have endured regarding the ethics of these early efforts as viewed in terms of present-day mores 40 years later, whatever the troubles, difficulties, and expense we encountered, the fact is that if nothing is ventured, nothing is won. As it turned out, lots was ventured, and, finally, something remarkable was won. Late in this series of operations occurred an event the effects of which are still to be seen in every country where organ transplantation is being carried out.

A South American Doctor

The big break came in the case of a 26-year-old South American doctor who was dying of chronic glomerulonephritis (generally known as Bright's disease) and its lethal complication: extremely high blood pressure (210/120). The donor kidney came from a woman who had died on the operating table during surgery for a narrowed aortic valve. The transplant operation was done on February 11, 1953. As in the previous case, the kidney was placed in the thigh. No ACTH, cortisone, or heparin was administered, but some testosterone and antibiotics were given. David Hume had suggested that the kidney might be enclosed in a small plastic envelope to keep the patient's white blood cells away from the outer part of the kidney. It seemed to me this was a good idea, though none of us knew enough about it to make a sage judgment. So we watched and waited. Somehow we were filled with optimism about this patient.

On the 19th day (March 2, 1953), nature smiled on kidney transplantation—and, as it turned out, on all organ transplantation—when the patient began to have a massive output of urine, a diuresis that persisted for almost 20 days. He required large amounts of intravenous fluids to compensate for the unregulated loss of fluid through the recovering transplanted kidney. After that outpouring of urine, the kidney resumed normal function that persisted almost 6 months, and he recovered from uremia (the bloodstream disorder seen in kidney failure). His blood pressure remained elevated; his own kidneys had not been removed. The patient returned home to South America. Five months later he returned, his kidney now failing. He knew that he was going to die, but like so many patients who have had some but not complete success with surgery at the frontier of knowledge, he was grateful for the 6 months of life he had been given. The magnificent human spirit of such patients cannot fail to impress everybody who sees them. He had a sort of calm assurance that the experience in his case would help others. Little did he (or we) know how right he was and how soon his prediction would be borne out.

He died on the 175th postoperative day, 5 months and 25 days after his operation. He had received a random, unmatched, fresh cadaver kidney. Under the microscope there was little evidence of rejection—another happenstance close match.

Our experience with this patient as much as any other single factor led to the successful initiation of kidney transplantation a little more than a year after his death, when Joseph Murray (David Hume's successor in the lab) transplanted a kidney from one identical twin into his brother. Clinical transplantation was born. Because of Hume's work, Joe Murray, George Thorn, Gus Dammin, John Merrill, and I felt assured that the identical twin experiment would be successful and should be undertaken. In addition, we suspected—as Thorn had so often emphasized—that to control blood pressure, both diseased kidneys should be removed. In retrospect, it is possible that our failure to follow this course was responsible for the ultimate loss of this patient.

*There follows here an account of the development of the artificial kidney, of the "arm kidney" episode, of the early work of Medawar, and the nature of human twinning.*

### A Twin Dying of Renal Failure

On October 15, 1954, Daniel Miller, a physician at the United States Public Health Hospital in Brighton, Massachusetts, called John Merrill at the Brigham to tell him that he had a 22-year-old patient (R.H.) who might need dialysis on the artificial kidney. Miller was an extraordinarily perceptive physician. He knew that the patient had an identical twin brother. He understood the significance of this fact, noting in the patient's record that the possibility of transplant should be entertained.

At first, John Merrill (physician in charge of the artificial kidney) was a little hesitant to take on a patient for dialysis who had Bright's disease and for whom dialysis would merely prolong the agonies of death. But when Miller told Merrill of the identical twin brother and the implied possibility of transplantation, Merrill assented. The ambulance carried the patient from nearby Brighton to Brigham Circle on Huntington Avenue.

When the patient was first admitted he was very sick. Because he suffered from chronic Bright's disease, he had severe hypertension, a common cause of death in such patients. He was incoherent, thrashing about and having frequent convulsions. The first thing the physicians did was to stop his drugs. Half the medication he was taking was discontinued. Soon, he got much better. It was then possible to test him and his brother to see whether or not they were truly identical twins. Such matching could be done in a variety of ways, including configuration of the external ear, fingerprints, thumbprints, toeprints, and several other tests to detect close physical similarity. Crossed skin-grafting was carried out by Joseph Murray, who at that time was concentrating on plastic and reconstructive surgery. Joe had recently completed his surgical residency and had a strong interest in research and a commitment to the study of kidney transplantation in the laboratory. The skin graft showed that the twin brothers could accept each other's skin with ease and with no signs of rejection. They were truly identical. The push to transplant gained momentum.

### Joseph Murray and the First Successful Transplant (December 1954)

After patient R.H. improved a bit on simple management, he was sent home for a while. When he failed to improve any further, he was readmitted and dialyzed on the artificial kidney. On December 23, 1954, the head surgeon of our urology division, J. Hartwell Harrison, removed one kidney from the donor twin, and Joe Murray transplanted it into the patient. The only role I assigned to myself was to carry this sacred kidney from one operating room to another, from Harrison to Murray, so it could be placed in its new host. Leroy Vandam, whom I had appointed Head of our Department of Anaesthesia only a few months before, administered the anesthesia—a touchy, difficult, and critical

## Murray's Medal

**"Now we're going to turn back into pumpkins," said Joseph Murray's wife, Bobby, as they boarded the plane for Boston from Stockholm on December 14, 1990. Accompanied by their six children, five sons- and daughters-in-law and four grandchildren, the Murrays had just attended a royal ball: the Nobel ceremony, at which Joe Murray '43B received the Prize for Medicine or Physiology. For 10 days they were fêted in regal style, including dinner with the royal pair themselves.**

**"I was grateful that when the king toasted me as his dinner partner...I had had much practice with learning the proper protocol for the Swedish toast, 'Skol'," says Bobby Murray.**

**In 1990 Joseph Murray was the co-recipient of the Nobel Prize for Medicine or Physiology for his groundbreaking work in the field of transplantation. He and Bobby Murray joined Nobel laureates E. Donnall Thomas '46, with whom Murray shared the prize, author Octavio Paz, who won the Nobel Prize in literature and is Mexico's first Nobel laureate, and the other laureates in this stunning annual celebration, where the world's greatest contributors to literature, physics, chemistry, medicine or physiology, and economics are the guests of**

part of the operation, especially in such a sick patient.

The operation went well. The kidney was placed in the lower abdomen, with the ureter running directly into the bladder, according to the procedure Murray had perfected by experiments on dogs. The blood-vessel suturing was done much as Carrel had taught 50 years before. The simplest of procedures was used for the recipient patient, since we were trying to avoid complicated or careless experimentation with dangerous drugs or medicines.

When both patients were taken from their respective operating tables, they were doing quite well. The transplanted kidney was making nice, clean, clear, yellow urine. Although you may never have developed any affection for urine, if you or your patients are unable to make any, you come to appreciate it.

A couple of days later the patient appeared to take a sudden turn for the worse, a bit of a nosedive. It proved to be only a temporary setback. His kidney picked up again, and about a month later he was discharged from the hospital, his twin brother pushing him along in a wheelchair toward the ambulance to take him home. This was only 18 months after the remarkably encouraging experience of David Hume with that South American doctor who hoped his treatment might help others even though, in the end, it failed him.

In this age of communication it does not take long for such discoveries to get around. Word of the discovery of ether 108 years earlier spread around the world in a few months. News of this first successful transplant took only a few days to be known wherever people were studying renal failure. Joseph Murray was soon recognized, along with his predecessor and collaborator David Hume, as a leading pioneer in surgical transplantation.

This first successful kidney transplant of 1954, although in the freak circumstance of identical twinning, demonstrated two basic truths: first, it showed that if transplantation of a kidney could be successful over time, the kidney would continue to work well, the elevated blood pressure would return to normal (usually requiring removal of the old, diseased kidneys), and the chemical imbalance would be corrected. The kidney could reside comfortably in the abdomen in that odd spot down in the pelvis, not too far from the usual site of the appendix. Second, and possibly more important, it showed that if the immune barrier could be overcome (as it was here by a fluke of nature), tissue transplantation would be here to stay.

We feared that the identical twin's kidney, put in the sick patient's body, would acquire the same disease that the patient formerly had: Bright's disease. After all, identical twins have the same sort of susceptibility to just about everything. That is exactly what did occur, and it was the ultimate cause of failure and death in that first identical twin transplant. Eight years later, in 1962, the patient, made well by the transplant from his twin brother, developed the same kidney disease in the transplanted kidney that he had suffered in his own kidney. The donor twin, fortunately, remained well and unaffected.

Even those 8 short years of life given to this young man

**honor of King Carl Gustav, Queen Sylvia and the entire country of Sweden.**

**"It is the big event of the year in Sweden," wrote Bobby Murray, who has been invited to speak around the country about her and her husband's experiences in Stockholm. "When we drove in our limos in a motorcade to the Concert Hall, people lined the streets waving little flags and adding to the excitement."**

**At first, the Nobel committee felt his work was too clinical in nature for the award. Then finally, three decades later Murray was awakened at 4:40 AM by a phone call of the sort every scientist hopes for; this one came from his daughter Ginny: "Daddy, Daddy, I've some wonderful news. You've won the Nobel Prize."**

**Murray admits that winning the Nobel Prize has definitely changed his life. "You can never go into a meeting without being noticed," he says. "And you can never miss a meeting without being noticed." He compares being a Nobel Prize-winner to being a goodwill ambassador for the organization.**

**"Joe, you're really joining a fraternity," Stig Ramel, the Nobel director, said to him. "We'll call on you." The year after their own fairytale time in Stockholm, Joe and Bobby Murray were guests of the 90th Nobel celebration, and Joe Murray has served as a representative of the organization at meetings and events around the United States and abroad.**

**But beyond walking on the rich blue carpets embossed with the Nobel insignia, gazing at the queen's diamond tiara and walking amongst the tremendous bouquets of Italian zinnias and carnations that lined the reception hall, there is another side to winning the Nobel Prize: the opportunity to travel extensively with the message about the crucial need for organ donation. In the United States alone, 30,000 patients are waiting for an organ transplant. "The fact is, three-quarters of them will die without having a chance of a transplant," says Murray. "Society is not sufficiently aware. Everyplace I go, I talk."**

**What Murray and the team at the Peter Bent Brigham Hospital began that day has grown into an international phenomenon: over 300,000 kidney transplants have been performed worldwide, and approximately 50,000 each of heart and liver transplants.**

**During a recent meeting of surgeons from around the world, Murray learned that transplants were being done in India, Africa and the Middle East. Indeed, one of his most poignant memories from the whirlwind travel schedule that immediately followed the announcement of the prize was being greeted at the Singapore**

had tremendous meaning for him. He had fallen in love with one of his nurses at the hospital. They were marrried and had a family. Like the South American doctor, neither of the brothers expressed anything but gratitude for the care, caring, and help they had received, even when it became clear that the outcome was headed for tragedy in the end.

If transplantation was to help the thousands of patients dying of kidney failure every year, it was necessary to move beyond the identical twin setting. This was a hard time, with black years of failure ahead.

*There follows a brief account of the "seven black years" and of the first successful transplant in an irradiated host, a fraternal twin, the procedures carried out by Joseph Murray, J. Hartwell Harrison and James Dealy, in collaboration.*

### The Advent of Drug Immunosuppression (1958-1962)

JUST at the height of our struggles, with whole-body irradiation and its seemingly hopeless outlook, there appeared a flickering candle visible on what seemed to be the most distant scientific horizon. It is a matter of some nostalgia to all of us who saw this candle that even though it flickered faintly, we realized it could be the light at the end of our particular tunnel. It might indicate a way to suppress immunity without the uncontrollable hazards of total-body x-irradiation. Maybe the black years would give way to something brighter.

**airport by a group of about 75 people holding a sign that read: "Singapore Transplant Patients Welcome Dr. Murray."**

**It's the patients whom Murray says he thought of while standing on stage before an audience of 1,200 people to receive his Nobel medal from the king. He thought about the patients who lived but also, and perhaps especially, about the ones who died. Murray says he still receives letters from the families of those patients and they are always filled with congratulations and words of gratitude.**

**"I'm very impressed with the altruism that exists in society," he says. "Your patients are like members of your family."**

***Terri L. Rutter***

That flicker came from a point very close to us in Boston: Tufts Medical School. It took the form of an article about a new anticancer drug developed by the Burroughs Wellcome Company. The laboratories of this British-American company had a brilliant young chemist in their midst, George Hitchings. He and his assistant, Gertrude Elion, had synthesized a new drug originally intended for anticancer chemotherapy called 6 mercaptopurine (6-mp). For the synthesis of this and other key drugs based on the body's own chemistry, these two scientists were awarded the Nobel Prize in 1988.

Obtaining this new drug from Hitchings, two hematologists at Tufts Medical School, Robert Schwartz and William Dameshek, had observed its effect on the immune system of experimental animals. They had injected human serum albumin into laboratory rodents. Today we would call this a xenograft model, in which protein is traded between two different species. The animals usually rejected this very strange material rapidly and removed it from their blood. Because the protein was tagged with a radioactive tracer, the rate of removal could be measured. The tag and the foreign protein rapidly disappeared from the bloodstream of the untreated animal. Schwartz and Dameshek then gave the animals 6-mp to observe its effect on the rejection of this foreign (human) protein. The drug completely inhibited rejection, and the foreign protein persisted in the bloodstream. In 1958, these two clinical scientists published an article describing the immune suppressive potency of 6-mp. To all of us in the transplant field, this result was both important and exciting. Researchers are daydreamers at heart. It was not too difficult to imagine that this or some similar drug might be used to prevent the rejection of grafted kidneys.

*There follows an account of the pioneering work of Roy Calne in developing 6-mercaptopurine and azathioprine as immunosuppressive drugs for use in kidney transplantation, work carried out both in London and at the Harvard Medical School Surgical Laboratories under the direction of Moore and Murray.*

### The First Successful Transplantation from an Unrelated Donor (April 1962)

The patient's initials were M.D. Those initials were prophetic because he taught so many lessons to so many doctors. He was 24 years old when he was admitted to the Brigham on January 21, 1962, and referred to Dr. Merrill's kidney study and dialysis unit, because he too was suffering from chronic Bright's disease. In M.D.'s case, the disease had gradually worsened over many years.

After admission, M.D. was treated by peritoneal dialysis, in which a plastic button is placed in the abdominal wall so a small tube can be inserted and replaced without pain or inconvenience for "blood washing" on the surface of the abdominal membrane. The patient was admitted to the hos-

pital six times during his first month to learn how to perform this type of dialysis himself so he could use it at home instead of coming to the hospital for sessions on the artificial kidney. Eventually, peritoneal dialysis became less and less effective. So the patient became a candidate for kidney transplantation. He had no twin, and no close relatives were available to act as donors. He began the long wait, knowing that he would be one of the first to be treated by drug immunosuppression for transplantation and that previous patients had not survived.

For a week Murray and two of his colleagues took turns sleeping in the hospital to keep a 24-hour watch in case some severely injured or very sick patient died suddenly, making a kidney available for transplant. The others on the kidney watch were Nathan Couch, who later helped us to preserve kidneys better, and Richard Wilson, who would within a few years take over from Joe Murray as head of the transplant unit.

There were three false alarms before they finally had their donor. On April 5, 1962, an operation was scheduled on a 30-year-old man for severe heart disease. For this particular operation at that time the patient's whole body was cooled. The operation was long and difficult, and when the patient was rewarmed his heart would not resume its normal beat. He died on the operating table despite a prolonged effort to restart his heart. After he died, his whole body was again cooled so that he could be put back on the pump-oxygenator (the heart-lung machine) to maintain his circulation artificially. His kidneys still functioned well; they were cool. And fresh. It took only a few minutes to complete the necessary arrangements with a helpful and understanding family. One kidney was removed only 40 minutes after the patient's death and was cooled further to 4°C. The total length of time from the death of the donor to the establishment of new, warm circulation in the kidney after transplantation was only 2 hours.

We knew from our laboratory work that all these circumstances were clearly favorable to the transplanted kidney. In fact, over the course of a few years it was widely recognized that this was the ideal way to preserve organs for transplantation. At the present time, whenever possible, even though a patient may have died of severe head injury or a brain tumor, the ideal setting for donation is total-body cooling and artificial maintenance of the circulation using the pump-oxygenator. This was the first such donation.

The recipient, M.D., was placed on azathioprine. Although the kidney started to put out normal urine at the time of the operation, function soon ceased for a full 10 days. It was a puzzle as to whether this was temporarily renal failure of the reversible type or prompt immune rejection of the new kidney despite use of the new drug intended to prevent just that.

On the 12th day M.D. started to make urine again, and on the 18th day he made 6 quarts (about 1 1/2 gallons) in one day! This was reminiscent of some of Hume's early thigh kidney transplants. The transplanted kidney can get wildly out of control and make much too much urine for a while, requiring extensive fluid treatment to keep the patient from becoming dehydrated by his own kidney. Such a kidney will literally piddle the patient to death if you are too slow in replacing the lost fluids.

On the 39th day, despite recovery of more nearly normal function and despite the drug, M.D.'s immune system tried to reject his kidney. He had a typical immunologic rejection crisis characterized by high fever, severe illness, and decreased urine output. This was treated with actinomycin D in addition to azathioprine.

When this crisis subsided, the patient began to improve but his blood pressure was still elevated. On the 50th day and again on the 62nd postoperative day, J. Hartwell Harrison performed an operation to remove the patient's own degenerated kidneys. Although the patient was a sick man for two such big operations, they were essential to his survival. Blood pressure now returned to normal. George Thorn's original idea of removing the kidneys to treat hypertension was again corroborated by events, this time in an extraordinarily important patient: the world's first transplant recipient on drug immunosuppression.

*There follows an account of the later course of patient M.D.*

M.D. had a hectic and troublesome time. Both he and his family, true to the stamp of these patients, remained grateful for the extension of his life. But it was not to last for very long, because on July 2, 1964, he died of generalized infection and severe liver damage. The latter may have been due to hepatitis virus from one or more of his transfusions. Also, azathioprine can be toxic to the liver. All three of these early transplant patients taught doctors important lessons that provided a model for the rest of the world. But only one, the fraternal twin, survived for a long time, remaining well and continuing his work for 25 years.

On the basis of our care of M.D., our experience grew rapidly. Of the first 13 patients operated on under immunosuppressive drugs at the Brigham between April 1962 and April 1963, 10 received kidneys from recently deceased persons, while three were given Matson kidneys. Matson kidneys are fresh when transplanted and require no preservation. Those three patients appeared to fare better than the others.

By 1963 kidney transplantation was spreading rapidly over the world. We were no longer unique. Most notably the technique was picked up again by David Hume, formerly of our department, who had become professor and head of the department at the Virginia Commonwealth University in Richmond; by Thomas Starzl in Denver, Colorado; and by René Küss and Jean Hamburger in Paris, where important work in transplantation had been going on

for some years using both radiation and drug immunosuppression. Roy Calne had returned to London from our laboratory and then went to Cambridge, England, where he became Professor of Surgery and Head of the Department of Surgery. He was knighted by the Queen in 1986 for introducing transplantation to Great Britain.

For this pioneering work, Joseph Murray was awarded the Nobel Prize in 1990.

*The following excerpt is from Chapter 31 on events in 1990.*

### Attending the Ceremony

The Swedish, like the British, enjoy laying it on with public ceremonies of pomp and circumstance. The Nobel ceremony is one of their greatest annual events, and the entire celebration lasts about 10 days.

At this time of year (December), the sun as viewed from Stockholm does not get more than a couple of inches above the horizon. The nights are long, cold, damp, and intrinsically gloomy, while the days are very short. What better time to have this huge, colorful, exciting international celebration with several events attended by leading figures from all over the world? It is a time for fancy clothes, evening gowns, and medals pinned to wide red stripes from shoulder to bellyband for the European gentlemen. But in point of fact, none of that is why the ceremony is held in December. It happens to be the time of Alfred Nobel's death, and was designated as the time for the event.

Our trip to Sweden was largely uneventful save for the fact that I forgot my pants. I discovered this crippling omission on Sunday, the day before the big ceremony. In Sweden, stores are open on Sunday. When I got to the men's dress-clothes department, a cheerful young lady said, in perfect English, but with a charming Swedish smile, "Well, well. Another American who forgot his trousers!" This is what most people would call tact.

Suitably attired, we attended the festivities. Joe's scientific presentation of his work was well done, modest, giving credit to his colleagues and predecessors. George Thorn and many members of the Murray family were present to enjoy the ceremony.

Kathie looked marvelous in her floor-sweeping gown and long, white gloves, an item I thought had disappeared from our society when I ceased to attend Boston debutante cotillions. We danced at the formal ball after the banquet. One of the Murrays' daughters-in-law is a singer (as is Joe's wife, Bobby) and had performed in Sweden before. So as a specialty of the ball, she sang some jazzy American pieces in Swedish and charmed the large gathering.

The banquet itself is held in the huge town hall, said to be the largest single-room banquet hall in the world. The 1,800 guests were precisely arranged by field of study and therefore possibly prior acquaintance. We were seated among friends and not too far from the young and sparkling queen, diamond tiara and all, and the rather stiff and formal young king.

This Nobel ceremony seemed a long way from the smelly dog lab in which the first experimental transplants had been done, the workaday world of developing organ transplantation, the gloom of death and failure, and our excitement in the successes of our long-surviving animals and, later, patients.

*Francis D. Moore '39 is HMS Moseley Professor of Surgery Emeritus and surgeon-in-chief emeritus, Peter Bent Brigham Hospital.*

# The Deliverer

*by James Locke Neller*

WHENEVER I REMINISCE ABOUT MY learning experiences as a Harvard medical student, such recollections invariably bring to mind the opening lines of a James Whitcomb Riley poem:

When memories keep me company
and move to smiles or tears,

A weather-beaten object looms
through the mist of years—

The 'weather-beaten object' I envision in this case is a very small, very dilapidated house on E Street in the unwashed environs of Boston, where as part of my training, I was introduced first-hand to the wonders and mysteries of obstetrics. This exposure to the realities of procreation was required (at least when I was there in the late 1930s) of all fourth-year students, and consisted of a two-week stint delivering babies in the homes of lower-income families who otherwise could not have afforded any professional care at all. Theoretically, this wasn't a problem because the women had been seen and followed in the free obstetrics clinic of the serving hospital, and were deemed prime candidates for normal delivery.

In order to make this system available throughout Boston's sprawling expanse, the medical school had acquired a number of small houses so that the students on call, usually two to a house, could live in the district to which they were assigned. Each house also accommodated either an intern or resident from the obstetrics department of whatever teaching hospital was nearest. It was considered a stroke of luck if it was a resident, because he was usually content to supervise, whereas the intern always wanted to appropriate the deliveries for himself.

On the first call, we were shown through the whole routine and allowed to participate only marginally. The next time we did it all ourselves under supervision. From then on we were on our own, with help quickly available by phone if needed. It was a matter of pride to be able to get by without calling.

Each student was required to deliver a total of six babies. If he couldn't do it in one stint, he had to go back another time to complete his quota. We all hoped we could get our six deliveries in one two-week assignment, even though it would be a sleepless, nerve-wracking experience, which could test the mettle of the strongest. Those who were successful were tacitly accorded superior status among their peers—a goal avidly sought by all.

It was indeed a pulse-pounding experience. Most of us had never even seen a baby born. All our training was academic, and as good as that was, it lacked the essential ingredient of experience. To a man, we were filled with a heady mixture of anticipation and apprehension, anticipation usually the strongest. We were scared all right, but we loved it: after all, this was the challenge we had chosen for ourselves and at last we were doing it. It was no place for the faint-hearted, but then neither was the entire practice of medicine.

The district houses were little more than shacks with the barest of amenities. The most important piece of equipment was the telephone. It was our lifeline.

I was assigned to the E Street district house. I had hoped it might be the one on Chambers Street because of a certain fame associated with that location. For one thing, it was the house where Professor Fritz Irving had served his stint when he was a student, and that alone made it special. The real cause of its notoreity, however, was the poem he wrote while on duty there—a bawdy parody of his experiences entitled "The Ballad of Chambers Street," written in the form of Gray's "Elegy Written in a Country Churchyard." The poem was immediately recognized as a classic, and over the ensuing years became a tradition, covertly possessed and memorized by all succeeding Harvard medical students.

Once Irving reached academic prominence as the William Lambert Richardson Professor of Obstetrics, he tried his best to eradicate the thing from the face of the earth for reasons that are obvious when it is read, but the more he tried, the more entrenched it became. I reluctantly refrain from reprinting it here in deference to his memory.

Disappointed though I was by the locus of my assignment, I reasoned that at least I'd be undergoing the same experiences that he had had, and in the same general area. With this to inspire me, I was determined to rise to the heights and prove myself worthy of such a celebrated mentor.

There was no one in the E Street house when I arrived. I checked the address to be sure I was at the right place. I hadn't expected much, and I was right. It was a tiny, wooden cracker box of a place, with peeling paint and two cracked and patched windows, one on either side of the flimsy front door. Four railed-in steps led up to it, without a vestige of a

porch. The small yard was brown with dead grass and was littered with refuse.

I shrugged, made my way up the less than solid steps and knocked. The door fell open at my touch. I stuck my head in and, when no one answered my query, entered. The interior was a perfect match to the outer facade. The floor was bare. There were two cots, two desks with chairs, a card table with two similar chairs, a fake fireplace with a mantle upon which rested a three-dialed radio shaped like a Seth Thomas mantle clock, and a telephone with a cord long enough to reach anywhere in the room. On one stained wall was a large dartboard with six darts in the bull's eye. On the other was a large framed print of a Maxfield Parrish idyll that seemed strangely out of place until I noted the many dart holes in the reclining nude figure.

I dumped my small bag of necessities on one of the cots and dialed my lifeline number on the wall-phone to report in. I was told that Dr. Van Etten, the resident on duty, was helping student Clayton with a delivery and would soon be back. There were no delivery calls for me at present. I heaved a sigh of relief and looked around.

In the cul de sac that passed for a kitchen was a sink full of dirty dishes. On either side of it were a late Neocene refrigerator and gas stove. In the refrigerator were milk and eggs, and a number of candy bars. There were a few cans of hash, baked beans and vegetables on the cupboard shelves above. The inevitable can of ground coffee, now nearly empty, and some jars of salt and sugar made up the rest of it.

Off the kitchen was a door leading to a small bathroom with a tub-shower. At its far end, another door led into a small but startlingly clean and tastefully decorated bedroom—obviously the resident's quarters. There was even a curtain on the single small window. The bureau held a chrome framed picture of a very pretty young woman holding a plump infant in her arms. Quite obviously, Van Etten was married and his wife had had a hand in the decor of his temporary duty station. I felt as though my presence was somehow defiling the place, so I went back in the living room and slumped in the springless lounge chair. The place smelled of tobacco and bug killer. I decided that it was not exactly the Taj Mahal, but what the hell, for two weeks it was home.

When Van Etten arrived, he turned out to be a very nice guy with a sharp mind. We shared a cup of coffee and he told me I was lucky, because the other student who was to have been my partner was ill and couldn't come. Although I regretted the plight of the absent partner, I couldn't help being elated by the news: it was a golden opportunity for me to make my quota! Van Etten assured me he'd take any deliveries I couldn't handle, and would meticulously herd me through the first one so that I'd learn the routine.

We'd no sooner turned in than the telephone rang. My heart began to thump in anticipation of my first exposure to the world of obstetrics. I grabbed the phone. Trying to sound calm and knowledgeable under the circumstances took a lot of discipline, but somehow I managed it. Carefully I accumulated the necessary data, not only as to location, but also the symptoms manifested, and other things necessary to assess the urgency of the call.

When I was through, I turned to get Van Etten and was surprised to find him standing behind me. It was evident that he had carefully evaluated everything I'd said and I was happy indeed when he congratulated me on how I'd handled things so far. After a short discussion of the situation, he agreed with my conviction that it appeared to be a true emergency call requiring immediate response.

I hardly remember the hurried ride through the dark and winding streets to our destination, but do remember the climb up several flights of dimly lit and littered stairs to a single-room flat about the size of an ordinary kitchen. The mother was 30 years old. She had two children and was married to an intermittently employed chimney sweep whose restricted income from the looks of things barely covered his beer bill, much less the food and rent. She was placid and cooperative and bore her labor pains as she apparently bore everything else in her life—with a Mona Lisa smile of acceptance and a quiet stoicism. Her labor pains, now timed at intervals of five minutes, were evidenced only by a slight squinting of her large and luminous dark eyes, and a barely audible forced and prolonged exhalation.

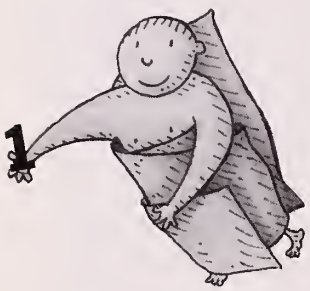
As things settled somewhat, I was appalled by the evident poverty and lack of privacy around me. In addition to the two of us, the small room also held her two children, her T-shirted and stubble-bearded husband who seemed concerned but completely uncommunicative, and an unidentified woman, probably a neighbor, who critically watched everything that was taking place before her.

I was saved from extensive sociological ruminations by the necessity of observing in detail Van Etten's routine in preparing his equipment and the patient, as well as his masterly method of establishing the necessary authority and control that were essential in order to accomplish the delivery with a minimum of problems.

The actual birth, when it came, was almost anticlimactic. Van Etten had little to do other than speak soothing instructions to the mother, receive her delivered child, tie and cut the cord, and put pressure on the uterus as he awaited delivery of the afterbirth. In the process, he allowed me to hold the infant upside down and by firmly patting its chest, stimulate its first voluntary respirations. Mindful of the remembered textbook fact that newborns tend to be slippery and hard to hold, I carefully performed the requisite act and was rewarded almost at once by a gasping cough followed by a loud cry of infantile outrage for having

been cavalierly ushered into the world.

I then placed him on a clean sheet, and under close supervision was allowed to tie and cut the cord. This done I washed the infant with warm water, wrapped him in a blanket and gave him to his mother. She received him with a look of glowing maternal joy, cradled him in the crook of her arm, and with soft sounds quieted his protestations.




The ambience of the scene suddenly took possession of me: how like a Raphael painting of the Madonna and Child. For a fleeting moment I could almost feel the intensity of the mother's emotion, but being male, quickly pushed the sensation aside as something not in my purview. That memory, though, has remained unsullied and instantly recallable ever since.

While all this was going on, between gulps of beer, the father occasionally glanced at the proceedings with an expression of mild amusement. The neighbor woman knitted in a tempo that closely paralleled the action, her eyes unblinking and all-seeing. She occasionally nodded with satisfaction if the goings-on pleased her. The two children, although their attention span was fortunately short, were fascinated and at times transfixed by what they saw. It must have been quite a remarkable experience for them.

As for myself, I was exhilarated. I felt saturated with many new sensations and learning experiences and too intensely preoccupied to define any subjective reactions clearly. That would have to await full reassessment at a later, less emotional time.

When it was all over, we packed up, gave oral instructions (no one could read) and returned to "our world," happy in the belief that we had done a commendable job and ushered another child safely into being.

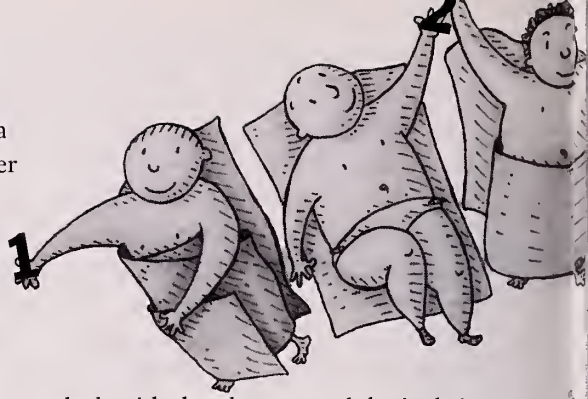
The next call came two days later and this time I was in the driver's seat. Somehow I managed to handle it with out any outstanding errors, and the patient cooperated by having quite an easy delivery. Van Etten nodded his approval when it was over, and for a fleeting moment I felt like a real doctor.

Actually, I was little more than a midwife and in my heart I knew it well, but that knowledge could not lessen my sense of accomplishment. It was another milestone on the long path to becoming a professional.

Back at the district house, we hashed over everything we could remember to see if my approach and actions could be improved for the next experience. I fell into bed and in my dreams did it all again, this time to perfection.


The next experience was not at all what I expected. In a fit of anticipation over going to my first autonomous delivery, I practically fell all over myself to get there. By the time I arrived like a knight errant to save a life and be a hero, it was all over. The baby had been precipitated into the toilet, placenta and all! The mother was drunk, and didn't even know she had given birth. I fished the baby girl out of her watery porcelain crib, suctioned her out and whacked her on the back. After a few worrisome moments, miraculously, she suddenly began to sputter and cry.

By the time I had taken care of the cord, secured the child, called for help,

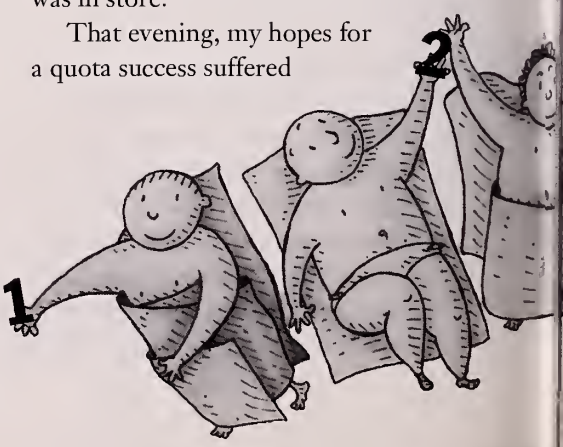



dealt with the placenta and the inebriated mother, and gotten things under the aegis of Social Services, it was almost dawn. Somehow I managed to get back to E Street, where I fell into bed and oblivion. Fortunately there were no more immediate emergency calls to interrupt my much needed rehabilitation.

When I finally awoke and had a chance to organize my thoughts, the lugubrious humor of the preceeding events struck me. When I got over that, I decided that things weren't so bad. After all, I now had credit for three deliveries. Three more and I'd be in clover.

Four days went by with only a few calls for false labor. At 2:00 AM on the tenth day, I got my call and delivered a child successfully, even though it was a very large one and took a lot of time and concentration. It was the first time I really felt that I had done something exceptionally well and totally on my own. I actually felt a little cocky about it, thus committing the age-old student's error of overestimating his level of expertise. I felt ready now and certain that I'd not only get my quota but would probably be awarded the Croix de Guerre or something for exceptional merit. Little did I know what was in store!

That evening, my hopes for a quota success suffered



a setback with the arrival of the other student. He had recovered from his intestinal flu and was ready to go. By protocol, he was the one to get the next delivery as his instructional case with Van Etten, and we would alternate after that. I began to pray for multiple calls.

Nothing happened. The twelfth and thirteenth days rolled by and all I could do was suffer in silence. At midnight the phone rang and both of us jumped out of bed as though shot. I backed off when I realized it wasn't my turn and slumped dejectedly on my cot. It turned out to be a bona fide case, and in a matter of minutes, Van Etten and student Weston were gone.

I got up and made a cup of coffee, which did little for my nerves, but at least filled some of the time. I paced around in complete frustration realizing full well that I'd have to come back again, and could never erase the onus of failing to complete my six in one stint.

In the depths of my despair, I didn't even register that the phone was ringing till the third ring. I came to with a start, and grabbed it off the hook. It was my fifth call, a true delivery. I got things together and started off, but couldn't shake the bitter thought that it would do me no good, I still would be one short of my quota.

As I approached the place, my better self took over. So be it. After all, I was here to learn, not to win contests. There was a woman waiting for me to give her solace and deliver her child.

When I reached the address, it was a run-down tenement house, which looked like no one had done a thing to it for years. Trash littered the halls, and a bum was curled up in a drunken sleep inside the unlocked door. The place smelled like tobacco, garbage and rot. A radio was blaring somewhere above, and sounds of scuffling and cursing almost drowned it out. I decided to get on with it and get it over.


There was no need to knock: the door was open. I started to go in, but was almost bowled over by the rapid exodus of a huge orange striped cat trying to escape the open jaws of a mongrel dog. An empty can of beer followed the dog down the stairs, accompanied by a string of curses never meant for human ears. When I turned from the fleeing animals to see where the invective came from, I was confronted by a mountain of a man whose bared upper torso was completely covered with hair. Out of reddened eyes slitted in anger, he viewed me, his mouth still open like the smoking maw of a spent cannon. It was not surprising that he recovered his voice before I did.

"Who the hell are you?" he asked, his voice reverberating like the base pipe of a cathedral organ someone had filled with gravel.

I explained. He let this sink in for a moment, then grudgingly moved aside just enough to let me pass. "She's in there," he grumbled, raising a huge hairy arm and pointing toward a doorway in the back of the room. His words were punctuated by a loud scream from beyond the indicated door.

He grimaced. "Just follow the noise, doc, you can't miss her." With this, he turned the radio on full blast and sank into a padded chair beside it. He never stirred from that spot for the rest of the time I was there, and paid no attention whatever to what ensued.

I hesitantly entered the room and was greeted by another shrill scream. The light was very dim and I did not see her at first. When I did, I was shocked. She was squatting naked over a wash tub, which was partly filled with blood and amniotic fluid. Recovering quickly, I dropped my bags and went to her. With great difficulty I managed to get her to agree to go to the bed and lie crosswise on it, so that I could examine her.

Fortunately, the light, such as it was, was behind me. I slipped on a pair of sterile gloves and proceeded to determine what the situation was. She was, as I had suspected, very close to delivery but there was no crowning yet. With luck I would be able to at least get some equipment ready if I hurried.

I made it with plenty of time. Though she had another pain or two, there was no apparent change. I got out a clean drape, put her in delivery position, placed my instruments close by, and started talking to her as calmly as I could. When not in pain, she listened intently and did what I asked of her. I was beginning to feel more confident and apparently so was she.

When the next pain came, I told her to hold her breath and bear down. She did so all right, but with so much power that I had to caution her to go easy. She just couldn't help it. She bore down even harder. Then, to my startled chagrin, a sudden gush of blood appeared and behind it, something else. I expected to see a head appear but alarmingly it was not a head, but an arm and hand!

The first thing that went through my mind was the day in class when one of the first-year students had asked the question, "What do you do if the presenting part is an arm?" Professor Irving, despite his austere appearance, definitely retained his sense of humor. "Son," he said with a straight face, "The answer is very clear. You shake hands with the child, congratulate the mother, and run like hell for a doctor!"

Fortunately, I also remembered the discussion that followed. Pulling on the arm would lead to disaster; not only a brachial plexus injury could occur, but also the head and body could well become jammed, making delivery almost impossible.

By this time the spasm was over, and the mother managed to relax. I knew it wouldn't last long, so I went to work as fast as I could. Gently I tried to replace the arm, and at the same time felt the position of the head. I was fortunate indeed, because the pressure of my manipulation suddenly caused the arm to reposition itself and the head swung into proper alignment. Though I didn't think of it at the moment, it was undoubtedly the small size of the infant and the mother's multiparity that were far more important than anything I did.

The next contraction delivered the head, and with gentle assistance from me the baby was born. I grasped her tiny ankles and inverted her, patting her back. The cry of life filled the room. I cannot tell you how I felt at that moment, but it was an exaltation beyond anything I had ever experienced. I hardly remember severing the cord, or cleaning the child and handing her, warmly covered, to the mother. When that had been accomplished, I just sat there soaking in the music of her soothing words and the infant's lusty cries.

After a moment, I automatically checked the fundus above, and then the introitus for laceration or bleeding. Everything seemed okay except that the fundus was still quite high and firm. I put gentle pressure on it for a while to ensure against it filling with blood, but after 10 minutes or so, I could detect no change. Satisfied for the moment, I got up, took my instruments and threw them into the cloth sack we carried for that purpose, and stowed them in my bag. I took off my gloves and threw them in the waste bin in the small kitchen. All that remained to do was wait for the afterbirth, instruct the mother and father on how to care for the baby, and leave.

I turned back to check again just to be double sure, and was greeted by a cry of pain. The mother was throwing her head from side to side, her eyes filled with fear. "Something's happening!" she cried in panic.

I calmly reassured her. "It's all right," I said softly, "it's only the afterbirth. Don't worry."

I laid my hand on her abdomen. The fundus was much smaller. I

I looked below, expecting to see the placenta. What greeted my eyes put me in a temporary state of shock. There, presenting at the introitus, was not the placenta but another head!

When I got myself under control, I reached for some gloves, but there were none. I had used them up, not expecting anything like this to happen. All my equipment was dirty and stowed away. All I could do was go ahead as I was and get the baby born.

I reached up and put some pressure on the fundus. To my surprise and joy, the baby slipped out and almost immediately began to gasp and cry. I found a sterile ligature in a glass vial, broke it and tied the cord. I hesitated to cut the cord with unsterile scissors, but reasoned that the area was already contaminated. I then covered the umbilical area with a sterile gauze pad, placed the tiny infant in a clean towel, and gave him to the mother.

She appeared totally confused, looking from one bundle to the other without understanding. It dawned on me that so shocked had I been at this whole unexpected turn of events that I had completely forgotten to inform her of her "second coming" until it was a fait accompli. While I was trying to adjust to this new dilemma, she stared at me at me in wide-eyed bewilderment. I had to come up with something.

"Well!" I said, trying to act as though this were an everyday event, "It looks like you got yourself a bonus!"

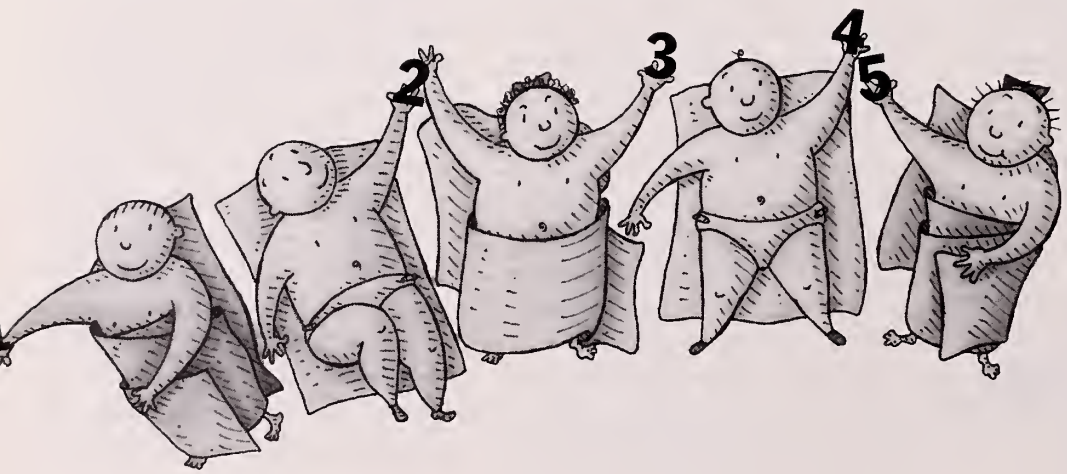
"A what?"

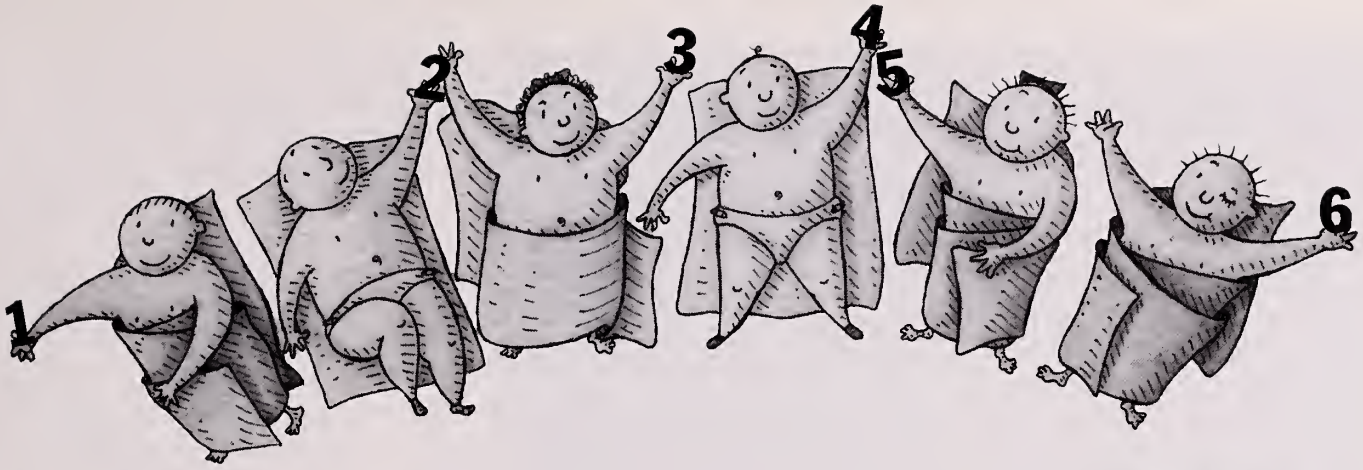
"A bonus, you know, an extra gift from God." She still looked blank. I smiled. "You, madam, are the mother of twins! One girl and one boy. What more could you ask?"

Her first reaction startled me. She stared at the second bundle in silence, then turned to me anxiously. "What am I going to name it? I never planned on two. I just knew I'd have a girl, my horoscope said so, so I had a name all picked: Bonnie!" She glanced at the tiny baby boy again, contemplatively, then back at me. "What was it you said I had?" she asked.

I chuckled in relief that she hadn't turned on me. "First a girl, then a boy," I replied.

"No, I mean, you called it something."






Illustrations by Manuel King

Suddenly I realized what it was she wanted. "Bonus, yes, I said you got a bonus."

"That's the word. It means 'An extra gift from God'—isn't that what you said?"

I nodded.

She smiled confidently. "That's it then. His name will be Bonus! Bonnie and Bonus Brezinski!" She beamed with parental pride.

I tried unsuccessfully to get my mouth closed.

It is almost anticlimactic to say that I had, by virtue of that double delivery, made my quota and thus assured myself of the respect of my peers. On top of that, I had also gained a measure of fame because not only had I delivered an arm presentation successfully, but I was the only student anyone could remember who had delivered, all by himself, a set of twins.

Now, many years later, I still think of those exciting and enlightening times with a glow of pleasure and, in reflective moments, ruminate over what might have happened to my six children. It may be just as well that I'll never know, but I still can't help wondering about them.

Especially Bonus.

*James Locke Neller '39 was a practicing surgeon in Los Angeles for nearly 40 years, serving as chief of staff or chief of surgery at various times for three of the area's hospitals. In retirement now, he is busily engaged in writing, gardening and enjoying his family.*

# The Old Chief

*Frederick C. Irving*

Reprinted from *Safe Deliverance* by Frederick C. Irving, Houghton Mifflin Co., 1942.

photo courtesy of Rare Books, Countway Library

In the history of every hospital that is old enough to have traditions there is always one name endowed with a special and particular luster, whose mention will conjure up visions of the brave old days and recall the achievements of the past. At the Hôtel Dieu it is Dupuytren; at Guy's it is Sir Astley Cooper, who lies buried in its chapel. The legendary figure of the Massachusetts General Hospital is Henry J. Bigelow—that brilliant, skillful, imaginative, and flashy Bostonian with the full beard—who each morning drove down Beacon Street in his dashing cabriolet. His high-stepping horse, jingling its monogrammed harness—to say nothing of Bigelow himself—filled the eyes of the dwellers on that thoroughfare in a most unaccustomed fashion. 'This' thought they, 'in a common person would be ostentatious vulgarity, but since he is a Bigelow it can only spring from vitality and exuberance.' Bigelow was not only the surgical tsar of Boston in his day, but he had a finger in everything, medical or otherwise, into which he could insert it. He was an Elizabethan, born out of his time and place, but completely uninhibited by such a handicap.

In appearance, personality, and character Richardson was no such arresting figure as Bigelow, but nonetheless he is firmly enshrined at the Boston Lying-in Hospital as its patron saint. He was a slight man of no more than medium height, with a high and prominent forehead, a long and slightly concave nose, and a mustache of the pseudo-handlebar or quasi-walrus type. He had lost his left eye from an infection acquired in his early days when attending a septic case (the same disaster had befallen the nurse who had assisted him). In its place he wore a glass substitute, which, fixed unwinkingly upon a delinquent student summoned before him in his capacity as dean of the Medical School, would fill the young man with foreboding; and even after the culprit had departed its presentiment would pursue him during his waking and sleeping hours. All pictures of Dr. Richardson show only his right profile—except his portrait in the faculty room of the Medical School, in which the artist has painted his full face but with his left eye in the shadow. Legend has it that the power of his single eye was uncannily acute; certainly monocular vision imposed no handicap upon him as a practitioner, nor did he ever fail to see what went on about him.

With younger doctors and students he sometimes appeared abrupt and reticent, but closer acquaintance always revealed him as kind, cheerful, and optimistic. His patients, both in the hospital and in private practice, adored him. Devoid of good looks, great charm of manner, or any of the accepted equipment for enchantment, he could influence women with no effort at all, probably because he inspired them to trust him. He even persuaded certain elderly and highly respectable spinsters, whose interest in illegitimacy must have been only of a speculative nature and whose knowledge of the reproductive function could have been no more than academic, to give large sums of money to the hospital for the care of unfortunate and 'fallen' women.

William Lambert Richardson was born in Boston in 1842, received his A.B. and M.A. degrees from Harvard College, and his M.D. degree from Harvard Medical School. He was thus a young man of military age at the time of the Civil War, but the conflict seems to have affected him little—certainly not to the extent of leading him into the Union Army. This is not surprising, for there were, like Richardson, a number of well-born young Bostonians who did not approve of the war and showed their disapproval by ignoring it. In 1868 he studied in Vienna and Dublin, and returning to Boston he was at once appointed to the staffs of the Massachusetts General Hospital, the Children's Hospital, and the Boston Dispensary. Trained medically rather than surgically, he practiced internal medicine as well as obstetrics all his professional life. Not only did he possess unusual diagnostic skill, but in certain of the manipulative procedures in operative delivery—notably in internal podalic version—he developed the dexterity of a virtuoso. He wrote an article upon manual dilatation of the cervix, a method of forced delivery, which probably did more harm than good; for it encouraged others less skillful to undertake a maneuver which even in Dr. Richardson's hands was sometimes followed by laceration, shock, and hemorrhage in the mother and death or irreparable damage to the baby.

Dr. Richardson was instructor in obstetrics at Harvard Medical School from 1871 to 1872, and again after the reopening of the hospital, from 1874 to 1882. Charles E. Buckingham, who, it will be remembered, succeeded D. Humphreys Storer in 1869 as professor of obstetrics, and John P. Reynolds, who followed Buckingham in 1877, were consulting physicians at the hospital; but they took no active part in its operation, nor were they often asked to give advice. Dr. Richardson became assistant professor in 1882 and was elevated to the rank of professor in 1886, occupying the chair until he retired in 1907. Like Channing and Humphreys Storer, he was dean of the Medical School, and later also dean of the faculty of medicine.

In 1880 Dr. Richardson established an out-patient department at the Boston Lying-in Hospital to provide free care in childbirth and the puerperium for poor women in their homes. Medical students were to supply this care under the immediate direction of the house officers, who in complicated cases were to call in members of the visiting staff. Although during the next year only seven patients were delivered on the district thus established, by 1892 the annual number had risen to over a thousand and to over two thousand by 1907, the year that Dr. Richardson retired. The project was later taken over by Dr. Charles M. Green who gave a summer course to second-year students. The admission by Dr. Richardson of students to the hospital wards in 1883 marked the beginning of the first teaching obstetrical clinic in New England.

Dr. Richardson was one of the ablest medical teachers of his time. Always forceful and dramatic, he had been during his undergraduate days at Harvard a star in the Hasty Pudding plays, and his lectures revealed the talents of a born actor. So deeply imbued was he with the spirit of the theater that when the Medical School in 1906 moved to its new buildings on Longwood Avenue he declined to lecture, like the other professors, in the pit of an amphitheater, and he was given a special room with a stage from which he might look down upon his students as he paced back and forth. Nothing was lacking but footlights and scenery; but 'Billy,' as the students called him, needed neither to create the proper illusion when describing some great crisis in obstetrics. In depicting the delivery of a woman with placenta praevia, he would remove his coat, roll up his sleeves, and demonstrate with deft motions how one dilated the cervix manually, performed internal podalic version, and delivered the baby.

In his lectures, as in his conduct of the hospital, Billy was no innovator; in fact certain uncharitable persons said that he gave exactly the same lectures in 1907 as in 1886, a statement which is undoubtedly an exaggeration. Be that as it may he taught obstetrics as he knew it with great conviction and vigor; there were no 'ifs' and 'buts' in his lectures.

On one occasion he informed his class that no baby had ever been born that weighed more than fourteen pounds.

'How do I know this?' he asked his pupils, fixing them menacingly with his one good eye.

They regarded him expectantly, for they knew the answer would be forthcoming and that it would be authoritative. After the proper dramatic pause he announced, 'Because in all my experience I have never seen a baby that weighed more than fourteen pounds!'

The class settled back in its seats, convinced that the top weight of large babies had been settled for all time. When, several days later, the hour for the next lecture arrived, they were startled to see him stalk in, followed by a house officer from the Lying-in Hospital who bore in his arms a large squirming bundle wrapped in a blanket. Dr. Richardson turned and faced the class.

'Gentlemen,' said he, 'I am a liar! How do I know that I am a liar?'

Again a pause for just the proper number of seconds.

'Because here is a baby that weighs fourteen pounds and two ounces.'

He pointed to the house officer, who opened the blanket and disclosed an infant, large enough to be at least three months old, which at that moment began to bellow raucously.

Not only did Dr. Richardson undertake with enthusiasm the teaching of students, but he began a systematic course of instruction for nurses at the hospital. The organization of the training school was his project, and he developed it with his usual thoroughness. On several previous occasions he had sent nurses to the Massachusetts General Hospital to give instructions in the bathing of infants. Following one of these demonstrations he told Mrs. Higgins, the matron, that the baby behaved beautifully and, said he, 'The nurse did well, too.'

Dr. Richardson made no original contributions to obstetrics, for he clung by habit to the principles and methods that he knew; he had none of the speculative curiosity that leads one to wonder how the cogs and levers of the human machine work. Although he himself was a conservative, once he was convinced that new ideas had merit he encouraged his younger staff to put them into practice. Assured of the value of antiseptic methods in the prevention of puerperal fever by the work of one of his house officers done, incidentally, against his orders—he established them in the hospital and wrote a classic monograph upon the results; impressed by the benefits in certain cases of pelvic obstruction to mother and child from Cesarean section, he encouraged George Haven and Edward Reynolds to perform them and he reported with enthusiasm their favorable results to the trustees, although during his whole professional life he himself never attempted an abdominal operation. His fame, however, will always be secure because he resuscitated the dormant hospital, transfused it with the vital fluid of his own optimism, and nursed it carefully until it could stand squarely upon its own feet, where today it is securely planted. David Cheever says of him, 'He made this hospital one of the great institutions of its kind in the world.'

In the early days of 24 McLean Street Dr. Richardson worked in the little garden behind the house, and on occasions he helped Mrs. Higgins, the matron, to stir her celebrated plum puddings. Of greater benefit, however, were his periodic forays upon the golden galleons of State Street. He was the son of a Boston banker and wealthy himself, his friends were men of substance, their wives were his patients, and he knew where the treasure lay and how to extract a tithe for the charity he loved so well. Possibly his success was due in some part to the conviction carried by his own generosity, for from time to time he made the hospital gifts. He once installed new electric wiring at his own expense in the McLean Street building, and after it was decided to move to Longwood Avenue, across the street from Harvard Medical School, he gave over half of the ninety thousand dollars needed for the purchase of the land. When in 1932 he died a widower and without children, he left the bulk of his fortune so that it would come eventually to the hospital and to the Harvard Medical School.

*Frederick C. Irving '10 was the legendary chief of obstetrics at the Boston Lying-In and the HMS William Lambert Richardson Professor of Obstetrics from 1931 to 1947.*

# For Better or For Worse

*by Thomas H. Coleman*

My uncle, Jerome Head '23, was one of the first surgeons to open a live patient's chest. He became a respected surgeon in Chicago, a student of tuberculosis, and the father of six sons, four of them doctors. He told me this story.

In 1923 he was fortunate enough to be accepted as one of Harvey Cushing's interns in surgery at the Peter Bent Brigham. Cushing believed that surgical skills and practice were best learned in an atmosphere of undivided loyalty without unnecessary distractions. He had an absolute rule that no intern or resident on his service could be married.

One weekend Jerome took two days off to marry my wonderful Aunt Jean, a nurse at Children's Hospital. A few months later their secret was betrayed by someone who noticed that "Miss Milne" was securing the back of her apron with rubber bands. Through whispers and an intricate grapevine the news eventually came to Cushing.

One morning the resident in surgery came to Jerome with the message that Cushing wanted to see him that afternoon in the board room of the hospital. Jerome had a pretty good idea of the reason and spent the next few hours with depressing and anxious thoughts about his future, knowing he was about to be fired out of the best internship anyone could hope to have.

With a dry mouth and a low state of mind, he entered the room to face Cushing, who sat on the opposite side of the table with the chief resident and the hospital administrator. Jerome remained standing and was not invited to a chair, which gave the scene the merciless air of a court-martial.

They all had a go at him. Didn't he know the rules? Why did he think he was an exception? Didn't he realize this would distract him from the responsibilities of his internship? Jerome's memory of the experience was that as he stood there hearing those unanswerable questions, he slowly regressed to the shame and despair of a young son before a scolding father.

When Cushing had finished with him and said, "Well, Head, have you anything to say?" Jerome responded in a way he might have when he was only 12 years old: "No sir, except that I am very sorry and I won't let it happen again."

His other two inquisitors laughed out loud. Cushing didn't laugh, nor did he fire young Dr. Head. At the end of the internship in November Jerome wrote Cushing a note of appreciation. He answered: "Dear Head, I'm glad you feel that way. We will all expect great things of you for your sake, and our own. Give my regards to your wife. I wish I could have seen her again. She will keep you up to the mark. Always yours, Harvey Cushing."

*Thomas H. Coleman '44 is an internist in Denver.*


Illustration by Manuel King

photo by Stuart Darsch, ghosted images of (l to r) Fuller Albright, Stanley Cobb, Oliver Wendell Holmes and Hans Zinsser courtesy of Rare Books, Countway Library

# Countway's Biographical Sleuths

*by Ellen Barlow*

LURKING AROUND EVERY CORNER, piled in aisle after aisle, are James Jackson Putnam, Oliver Wendell Holmes, Hans Zinsser, Walter B. Cannon, Edward Churchill, Paul Dudley White, Fuller Albright, Stanley Cobb and legions more Harvard legends. Spend enough time in Rare Books at the Countway and you will hear them talking.

Dick Wolfe, curator of rare books and manuscripts, his wife Elin, associate curator of manuscripts and archives, and their staff of six could be kept busy for the next century organizing and cataloguing the papers left to the library by famous faculty and alumni. From some people, they have three or four boxes of letters, files, patient notations—papers accumulated throughout professional careers. In one of their most extensive collections—on Clarence Gamble '20 and his work in the birth control movement—they have 266 boxes holding over 100,000 pieces that have been read, labeled, individually placed in acid-free folders, and organized in boxes labeled with contents.

"Letters tell the background; they're where what was really going on emerges," says Dick Wolfe, who himself has published extensively on a diverse range of historical subjects. "In them you can get a sense of all the interlocking or fighting personalities. You don't find that in their published works."

For anyone writing a biography, giving a speech, or writing an article on an incident from medical history, these papers—plus the unsurpassed

collection of rare books and manuscripts—are an El Dorado of opportunity. They are a never-ending source of biographies waiting to be written.

There are boxes of materials by members of the Harvard medical dynasties: the Shattucks, Warrens, Channings, Bowditches. There are records of the Massachusetts Medical Society from before 1851 to 1971; the post-WWII papers of George and Olive Smith, including their research on DES, which turned out later to be a horror rather than a help for miscarrying women. There are the patient records of Eugene Emerson, a psychologist at Mass. General Hospital and Mass. Mental Health Center who took over the patients of James Jackson Putnam. (Elin Wolfe calls this "One of the richest mental health collections of its kind.")

Physicians with a desire to keep a mentor or friend's memory alive, scholars, journalists and medical historians call and come in all the time to use these collections. About half of the Countway Library houses historical materials, which are the basis of its world-class status.

To write a biography or reconstruct history, the Wolfes are strong believers in hands-on scholarship. Browsing is essential to allow for serendipity, they contend. "You have to live with this stuff," says Dick Wolfe. "If you want to research a subject, you have to be like a shoe-leather epidemiologist—always reading, always collecting."

There is a physician from Tennessee sitting at a table, surrounded by boxes filled with materials from the Thorndike Laboratory by Bill Castle '21. He's working on his second draft of a biography and Dick Wolfe, who has been curator here for 30 years, is telling him stories about Castle, pulling out other materials as they occur to him. As Wolfe says later, "You read these things and you can hear Bill Castle talking."

Wolfe knows where everything is—even the uncatalogued—because he has literally carried all of it to where it now rests, after sifting through papers and transporting them from the benefactor's house or office. But even he finds things he never saw before or that pique his interest when he pulls out a box for someone else. "I start files and drop pieces in until someday I write something up," he says. He gets up every morning to write and has three or four projects going at once.

*"When a person lives and does things, it always involves others, which creates a lot of dust."*

He just finished, for example, a lengthy article on John Dean, the first physician to do neuroanatomy research in the United States in the mid-nineteenth century. When he first started his research on Dean, all he had was a one-page obituary. That led to correspondence that he found at the Smithsonian. Then he came across a book by Dean from 1863 that had anatomical photos Dean had taken, such as of a cross section of the medulla—perhaps the first book with medical photography. From the single original page, Wolfe eventually wrote 120.

"When a person lives and does things, it always involves others, which creates a lot of dust," he says. "When the dust settles, you can recreate what went on. If you can find enough records, you can reconstruct from ashes."

He has written several books that each took a decade or longer to complete because there was not much material on their subjects: one on the historic rise and fall of the craft of marbled paper (Wolfe is a marbler himself) and the other on music engraving and publishing. Detective work to dig up information for these books took him to libraries across Europe.

Sometimes an article or book emanates from a forgotten footnote to history. Eli Chernin, a professor of tropical public health who started writing late in his career, wrote many fine medical history articles, says Wolfe. One was a definitive paper on Richard P. Strong and the Manchurian plague. When looking through Strong materials, Chernin discovered an incident that no one talks about today, although there was a public health investigation at the time: when Strong was experimenting on prisoners, someone switched vials and he unintentionally gave smallpox to his subjects.

Though obsessed is not the word Wolfe would use to describe how caught up you can get with the people you are researching, he does acknowledge that your subjects become your friends or your enemies whom you live with all the time.

"Of course, you try to get inside their heads and they certainly get inside yours," says Elin Wolfe, who is co-author with Cliff Barger '43A and Saul Benison of *Walter B. Cannon: The Life and Times of a Young Scientist* (Harvard University Press, 1987). She would find herself in conversation with her teenagers saying something like, "Well, in the case of Cannon..." and they'd groan. She was contracted to catalogue the Cannon papers in 1978 after completing several other major collections (at the time, she was not working full time in Rare Books) and Barger and Benison were so pleased with her results that they asked her to stay on the project as a co-author. They are now working on volume two.

So many collections remain uncatalogued because it takes time and money. "It's a very labor intensive activity," says Elin Wolfe, "but then so is scholarship. Learning is labor intensive." With the trend in libraries now

*People write medical biographies out of respect or affection for their subject, and certainly not for the money.*

to store materials off-site with only a bar code on the box, she is concerned that "no one is going to know the treasures lurking in that box." With online computer cataloguing, there is a further distancing of scholars from the people who can help them find what's in the box.

They preserve these papers, because as Dick Wolfe says, "If we don't, who else will?" It's the same reason people write medical biographies—out of respect or affection for their subject, and certainly not for the money.

As for the actual writing of a book, Wolfe reveals what he believes are the three critical ingredients: you have to know something, be able to express it, and organize it. "Many people can do the first two, but few can do the third well." You need to be more than a good storyteller, he says. The book can't plod along; it should "want to be read."

There are academic presses that publish medical biographies but, he says, because they typically don't sell well, they're very difficult to get accepted. This is why he started Countway Library Publications in 1972 with a small fund of money to which the authors can contribute. They have published such medical biographies or histories as Benjamin V. White's '34 book on Stanley Cobb '14, Oglesby Paul's '42 books on Paul Dudley White '11 (1986) and on Francis Weld Peabody '07 (1991), Gordon Scannell's '40 account of Edward D. Churchill '20 on his Moselely Traveling Fellowship (1990), and Carleton Chapman's '41 on John Shaw Billings (1994).

Often Dick Wolfe advises people writing biographies to tape interviews with people who knew their subject. These oral histories then become part of the archives. In fact, in part because people aren't saving their papers as much these days, an oral history project—initiated by Arthur K. Solomon (professor of biophysics emeritus)—is, as Wolfe puts it, "getting them while they're alive." So far they have tapes and bound transcriptions of interviews with John Edsall '28, Francis D. Moore '39, George Thorn and Seymour Kety.

It's crowded on the three half-floors that Rare Books occupies in Countway, in more ways than physically. There are thousands of people from the past, patiently waiting for someone to listen to them once again.

*Ellen Barlow is editor of the* Bulletin.

# Serendipity and the Career

*by Franklin H. Epstein*

# of Herrman Blumgart

THE FIRST HARVARD PROFESSOR OF medicine at Beth Israel Hospital was Herrman Ludwig Blumgart '21. More than any other person he was responsible for establishing that institution as a major academic hospital at Harvard Medical School.

Most illustrious careers are shaped in part by one or more happy accidents, and Blumgart's was no exception. The term serendipity has been used to describe this phenomenon. It derives from the story by Horace Walpole of the three princes of the imaginary country of Serendip, who were subject to the most amazing accidents that always turned out for the best. It is interesting to trace the role of serendipity in Blumgart's own career.

He was born in Newark, New Jersey in 1895, the last of four children of Albert and Sophie Blumgart who had come to America from Harburg in Bavaria. His father, a gentle, rather easygoing man, was a butcher who ran a grocery store. Sophie was the strong one in the family, determined that her children should succeed. They were not religious Jews; none of the three boys became a bar mitzvah and German, not Yiddish, was spoken in the home. (Towards the end of his life, after Blumgart had a stroke that left him aphasic, the first words that came back were German.)

The oldest brother, 15 years older than Herrman, was Leonard Blumgart. After leaving high school in Newark, Leonard was admitted to Columbia College of Physicians and Surgeons (in those days college was not required). He became a psychiatrist, was one of the first to be analyzed by Freud, and later helped to found the New York School of Psychoanalysis. In many ways he was like a parent to Herrman, who was the baby of the family. Herrman helped in his father's store and went to public school in Newark, where he excelled. Upon graduation he received a full scholarship to Lafayette College in Pennsylvania as well as a partial scholarship to Harvard; he enrolled at Lafayette because the scholarship paid more.

During his first year at Lafayette, the first of many happy accidents befell him. He was absolutely miserable. He was taunted for being Jewish and was hazed unmercifully by upperclassmen. On his brother's advice, he applied for admission to Harvard in the sophomore year and was able to take advantage of the partial scholarship previously offered. He made up the rest of the necessary money by working during his vacations at his Uncle Louie's clothing business in New York City.

At first he wanted to be a businessman like his uncle. But he was influenced at Harvard by a charismatic professor of psychology, Ned Holt, under whose spell Walter Lippman also fell. It was not hard for Blumgart to decide, given the example and encouragement of his brother, to go into medicine. His record was good enough that he was offered a place in the Harvard Medical School class at the end of his junior year. But his mother insisted that he complete the entire course at Harvard before going to medical school—she wanted him to have that Harvard degree.

In 1917, when Blumgart entered HMS, the curriculum had undergone some recent changes. As originally urged by Harvard's famous president, Charles Eliot, the case method was increasingly being used in the preclinical years to teach basic sciences. David Edsall, newly appointed dean, had worked to modify the curriculum to free it from rigid requirements. He wanted to "provide an opportunity for students of superior capacity to go beyond the routine requirements and get a somewhat more advanced and scholarly development." Back in the early years of this century, these ideas were referred to by some as a "New Pathway."

In his first month as a freshman, when the head and neck were being taken up in anatomy, Blumgart had the temerity to dress up in surgical cap and gown, scrub up, and approach the eminent Harvey Cushing, who was operating on a series of brain tumors in the surgical amphitheater at the Peter Bent Brigham Hospital. Assuming he was a resident, Cushing immediately directed a string of peremptory questions at him and reduced Blumgart to an embarrassed stammer. "I'm sorry, sir; I'm just a freshman medical student."

Without breaking his stride, Cushing commanded his diener to bring a copy of *Gray's Anatomy* and set it on the stand. Cushing then proceeded to instruct the awed freshman in surgical details of craniotomy. Blumgart often quoted this incident in later life as an example of the art of teaching, but this serendipitous exposure to surgery so frightened him that he decided to go into psychiatry.

He was dissuaded from that course by another happy accident. In his senior year, thanks to the new curriculum, he was able to work with Cecil Drinker and Francis Weld Peabody in Walter Cannon's Department of Physiology. Peabody, the young, charismatic star at the medical school

whom everyone adored, was a Boston Brahmin with brains and charm. Drinker was interested in the effect of pulmonary congestion on gas exchange and vital capacity in the lungs of experimental animals. Drinker, Peabody and Blumgart collaborated on a substantial paper describing this work. What's more, Blumgart had gained the friendship and respect of two men who would help him in his future career.

In 1921 Blumgart graduated from HMS. William B. Castle was in his class, as was Tracy Mallory, the famous pathologist. Of the 60 or so class members listed in his yearbook, most were identified by a nickname: Bill, Chip, Chuck, Shorty. In the entry for Herrman Ludwig Blumgart there is no nickname.

Against the advice of an assistant dean, he applied to the Massachusetts General Hospital and to the Peter Bent Brigham for an internship in medicine. The advisor convinced him to withdraw his application to the MGH because it would only lead to embarrassment for a Jewish candidate, but Blumgart refused to withdraw his application to the Brigham. Henry Christian accepted him as the last of nine interns.

The full-time staff at the Peter Bent Brigham Hospital in 1921 consisted of Christian as physician-in-chief; Channing Frothingham, another eminent academic internist; Cyrus Sturgis, the chief resident who later became the powerful and autocratic chief of medicine at the University of Michigan; and nine house officers. Among the eight part-time faculty was George Richards Minot, later to win the Nobel Prize for discovering the liver treatment of pernicious anemia. Francis Peabody was nominally at the Brigham, but in 1921 was on sabbatical leave at the Peking Union Medical College in China.

Interns were on call every other night and every other weekend. They were unmarried and lived in the hospital. There were no intensive care units,

**Department of Medicine at Beth Israel Hospital at the first of what came to be an annual dinner, Harvard Club 1930. Blumgart is seated at the head of the table with Harry Linenthal, physician-in-chief, to his right. Samuel Levine is the last person seated to the extreme right of the photo.**

and if a patient was on the danger list, the intern was not supposed to leave the hospital. On the other hand, the length of stay averaged 14 days and by today's standards, the pace and the number of patients admitted and worked up per day was slow.

We hear a lot about the iron men of yesteryear, but an inspection of the medical records of the Peter Bent Brigham Hospital (all still stored in a warehouse in New Hampshire) reveals that in the sample week of November 28, 1921 there were 50 admissions. With nine house staff, this works out to five or six admissions per intern per week. What made it even easier was that 20 of those 50 had the admitting diagnosis of syphilis and were routine admissions for intravenous arsenic therapy. Five admissions during that week had pharyngitis or pneumonia. Two had diabetes mellitus, difficult to treat in those days as insulin was not yet commercially available. Three had heart disease, two had mitral stenosis and one had what was called chronic myocarditis.

One of the 50 admissions turned out to be another serendipitous occurrence in the career of Herrman Blumgart: a fascinating patient who became the subject of a well written paper that would gain young Blumgart deserved praise. The patient was a 16-year-old schoolboy from Medford with diabetes insipidus caused by congenital syphilis, an unusual event even when syphilis was a more common disease than it is today.

By 1920 it was known that posterior pituitary extract would reduce polyuria in cases of diabetes insipidus. A commercial preparation ("obstetrical Pituitrin") was used in obstetrics for another purpose: to contract the uterus after delivery. For an antidiuretic effect, injections had to be given subcutaneously every few hours, however, and the treatment was not thought to be practical. The extract was ineffective when taken orally.

In a meticulous piece of clinical investigation that would do credit to a modern clinical research center, the 26-year-old intern demonstrated unequivocally that when obstetrical Pituitrin was sprayed into the nose it had an antidiuretic effect entirely comparable to subcutaneous injection, though larger quantities were required to produce the same effect. No antidiuresis was seen when pituitrin was retained in the mouth for 10 minutes

and then swallowed, or when it was given by rectum. An interesting feature of the original hospital record, not reported in the final paper, is that Blumgart tried injecting normal cerebrospinal fluid intravenously, presumably in the hope that antidiuretic hormone might be present in high concentration in the cerebrospinal fluid. No effect was obtained.

Blumgart published these results in the *Archives of Internal Medicine* early the following year in 1922. It was, of course, the first description of what was to become the standard treatment of such patients. George Minot wrote to him, "This manuscript is truly excellent. It demonstrates splendid clinical observations of the highest order. I consider this work of yours a true monument to Harvard medicine."

Why did young Blumgart think of putting pituitary extract into the nose? There are two hints in the original *Archives* article, contained in Blumgart's meticulous footnotes. The first mentions that Peabody, with whom he had worked in Drinker's laboratory, had earlier studied polio virus at the Rockefeller Institute and thought that the virus gained access to the central nervous system from the nose via lymphatics leading directly from the upper nasal passages to a subarachnoid space. The second note is a personal communication from Otto Schloss, a professor of pediatrics at Children's Hospital at that time, who made rounds at the Brigham and who must have dispensed his clinical pearls on infectious disease to the interns there, including Blumgart. One of them was: "Clinically, in children, a surprisingly small patch of inflammation in the nasopharynx excites convulsions, stupor, and other phenomena indicative of considerable cerebral irritation."

Blumgart described another patient seen during his internship in a paper that achieved less fame but is just as interesting. A 32-year-old man had developed profuse fatty diarrhea, weight loss and tetany. He died in extreme cachexia and at postmortem the abdominal lymph nodes and spleen were found to be enlarged. Phagocytes with foamy reticulated cytoplasm were found in the lymph nodes and in collections under the mucosa. On going back through the records of the hospital Blumgart found two other similar cases. In retrospect these were all early examples of Whipple's disease.

*But for serendipity, Blumgart might well have specialized in disorders of salt and water, in endocrinology, or in gastroenterology.*

But for serendipity, Blumgart might well have specialized in disorders of salt and water, in endocrinology, or in gastroenterology. He was granted a Mosely Traveling Fellowship, however, to study in London for a year and arrived there in January of 1922. His intent was to attach himself to Sir Henry Dale, then a famous professor of pharmacology at the University of London, and to enroll in a course in physical chemistry, medicine's premier basic science of the 1920s.

He was too late to enroll for the course, however, and Dale's department was entirely caught up in the big academic-industrial joint effort of 1922—the search for a marketable insulin. Blumgart, who never really enjoyed bench chemistry, was unwilling to become another pair of hands extracting the pancreas. He spent a good deal of time in the library looking up the world's literature on nasal absorption and Dale let him do some experiments entirely on his own (as he emphasized in his letters to Drinker), in which he measured the absorption of various substances from the nose into the bloodstream. He tried squirting insulin into the nose, but it was not absorbed.

He was getting pretty tired of this when another happy accident occurred that was to definitively turn him into a cardiologist. In 1923 Sir Thomas Lewis was perhaps the most charismatic, provocative and exciting cardiologist in Britain. He was doing all kinds of interesting things with the cumbersome but fascinating electrocardiograph, describing circulatory reflexes, arrhythmias, syncope and abnormalities of the peripheral circulation. Blumgart fell under his spell and was immediately put to work measuring venous pressure at the bedside (by the same method we use today) in cases of paroxysmal tachycardia and other disorders of the heart. Work with Lewis on the wards of University College Hospital was so interesting that Blumgart, recently married to Ruth Mack, who was completing her medical education in Boston, turned down an offer from his father-in-law, Judge Julian Mack, to join him on an extended vacation jaunt throughout continental Europe.

At the end of his fellowship, Blumgart didn't have a job to go back to, so in the fall of 1923 he wrote to Cecil Drinker inquiring about the possibility of working with him in the physiology department or, as he preferred, with Peabody at the Boston City Hospital. That golden boy of Harvard medicine had been made professor and chief of a new unit to be called the Thorndike Memorial Laboratory, located at Boston City Hospital. It was to be a place where clinical investigation could be carried out in the context of service to the poor of Boston.

Because the laboratories were not yet ready, Peabody, back from the Peking Union Medical College, was still vacationing at his family home in

Northeast Harbor, Maine, late in September 1923. Drinker wrote to Peabody indicating that his own department was absolutely full and although he wished he could make room for Blumgart, whom he liked, he saw no way to do it. "I wondered whether you would have any opportunity for him in January and whether you cared to take in another of the Chosen People. I feel sure that he is a man who will put things through. He is what I think of as the honest type of Hebrew—that is to say, he does not try to be anything else and does not want to be."

Peabody wrote back that he was "not particularly worried about his race," but that of course he would have to look into the budget situation with the hospital director, John J. Dowling. He mentioned to Drinker that he had in mind to recruit Bill Castle as well. By January the budget arrangements had been made and Blumgart, age 28, was appointed as assistant resident physician at the Thorndike Memorial Laboratory at the salary of $400 per year.

It was time for another gift of serendipity. That came in the form of a noninvasive way to study the velocity of blood flow—the circulation time. As a medical student in Cannon's laboratory working with Peabody, Blumgart had tried a few desultory experiments to measure the velocity of blood flow from the vein of one arm to the artery of the other by injecting salts of lithium and strontium, but these experiments had been inconclusive. In 1922, while in his lonely library period in London, Blumgart had read a paper in the German literature in which fluorescein was injected as a marker substance. This substance also posed technical difficulties and arterial puncture was necessary to get good results.

The answer was radioactivity. Peabody had been physician-in-chief at the old Huntington Memorial Hospital, a cancer hospital, located on the present site of Countway Library. A common practice there was to treat malignancies by inserting radon seeds deep into them. After the radon decayed, a lot of radioactivity remained and had to be disposed of.

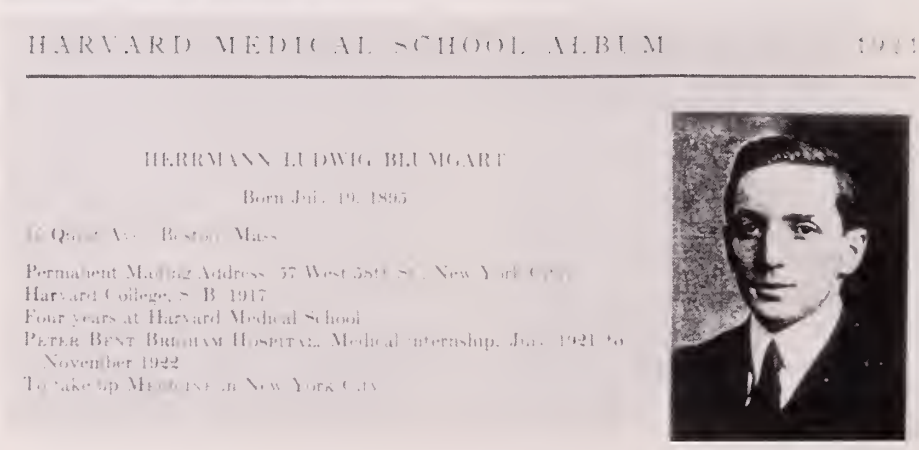
Together with a physicist from MIT named Otto Jens and an engineer named Hewlett, Blumgart devised a painstaking way to precipitate radium from the seeds onto platinum electrodes, dissolve it in hydrochloric acid and then dilute it in a syringe so a small amount could be injected intravenously. The amount of radioactivity (1-5 microcuries) was, they thought, negligible. Jens devised an elaborate cloud chamber as a detection device so that the passage of the injected radioactivity through the contralateral arm could be noted instantaneously and precisely, with the body shielded by a lead barrier. They used conventional stopwatches initially to determine the mean normal arm-to-arm time—18 seconds—and its variability in disease. In later studies they used what was essentially a Geiger counter as a detector with a constant source of voltage—some 1,000 small test tubes set up in a series on huge racks. These were the first published clinical studies using radioactive indicators.

In 1925 Soma Weiss arrived and was assigned to work as Blumgart's fellow and assistant. Together, they measured the circulation time in almost every disease that presented itself on the teeming wards of the Boston City Hospital. They presented an abstract of their work at the 1925 meeting of the "Young Turks," the American Society for Clinical Investigation. (Also on the program was the first description of the electrolyte abnormalities in gastric alkalosis by a young pediatrician from Children's Hospital named James Gamble.) Peabody's name appears first on the abstract, most likely because he suggested the use of radioactivity. In later presentations Peabody is thanked for his interest and his encouragement, but he is not listed as an author (an indication, possibly, of his generous style as chief).

Publication of these interesting results was delayed for two years while data were accumulated. Then, between 1927 and 1929, Blumgart and Weiss published 15 papers, followed in 1931 by a 75-page review of the velocity of circulation appearing in *Medicine*. In 1927 alone, this prolific duo published eight papers in the Journal of Clinical Investigation. All but one list the authors as Blumgart and Weiss.

In 1928 the newly erected Beth Israel Hospital became affiliated with the Harvard Medical School. Harry Linenthal, its physician-in-chief, was highly respected in the Boston community, but the hospital's trustees and the medical school wanted, in addition, to identify a director of research, someone with a vigorous vision of research medicine, who would be chairman of a Harvard department and in charge of teaching Harvard students. Joseph Aub of the Massachusetts General Hospital was

**Blumgart on graduation from HMS, age 26, in 1921. The permanent mailing address was that of his brother Leonard, then practicing psychiatry in New York City.**


HARVARD MEDICAL SCHOOL ALBUM 1921

HERRMANN LUDWIG BLUMGART

Born July 19, 1895

Permanent Mailing Address 57 West 58th St., New York City
Harvard College, S. B. 1917
Four years at Harvard Medical School
Peter Bent Brigham Hospital. Medical internship, July, 1921 to November 1922
To take up Medicine in New York City

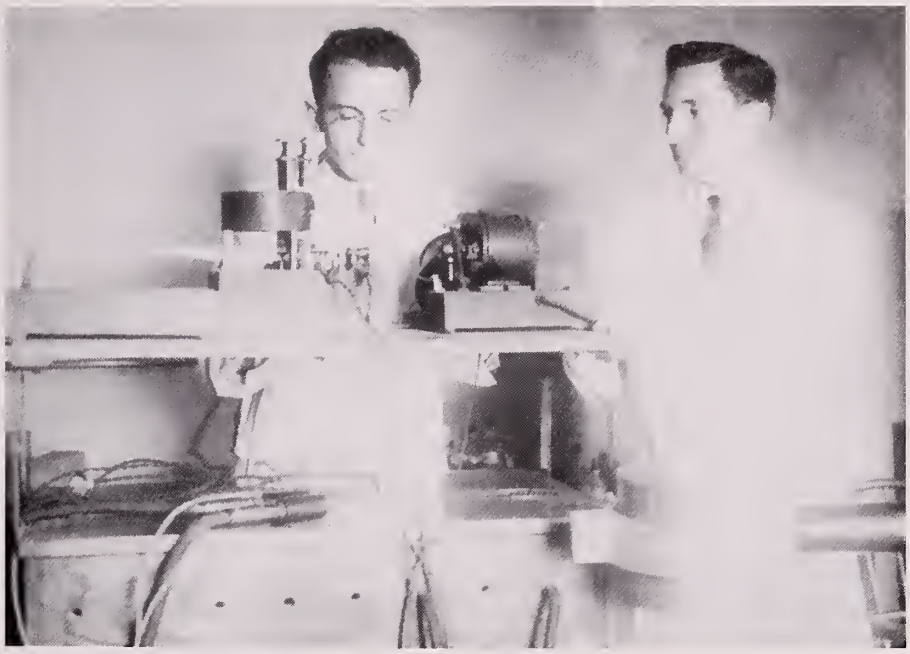
first approached, but he turned down the post. Blumgart was the favorite both of Christian and Peabody; he had just declined a lucrative job offer at the University of Chicago and he accepted the new post at Beth Israel immediately. Until his retirement in 1962, Blumgart was the most influential person at the new Beth Israel Hospital.

Ben Banks, who was a medical intern in 1930, has described the way rounds were conducted in the old days. They were very formal. Rounds always took place at the bedside with Blumgart on the patient's right and the student or intern on the patient's left. The head nurse stood at the patient's head, on the professor's side, to assist in readying the patient for a physical examination. The ward service consisted of 50 beds, 25 male and 25 female; there were two open wards of 20 beds each.

Cases were presented at the bedside in five minutes maximum with no reference to notes. Following the presentation, Blumgart did a pertinent physical, pointing out positive findings to the group. His practice then was to sit down on the bed and talk to the patient while others listened. He would often hold the patient's hand as he explained the nature of the illness, sometimes drawing a picture to make his explanation more clear.

"Knowledge of the nature of the illness and its expected course, explained in kindly and optimistic terms, is comforting," he said to his students. "There is no condition so complex that it cannot be explained in simple, intelligible language."

Blumgart brought to Beth Israel what was then thought of as the Brigham system for interns on call. Interns were expected to sleep in the hospital. It was not an easy life. With an economic depression looming, the hospital director, worried about the bottom line, made things more difficult. Lights were turned out in the dining room after 11:00 so that the interns wouldn't eat too much and attendants kept watch lest they take more than one scoop of ice cream.



**Soma Weiss (left) and Herrman Blumgart in their laboratory at the Thorndike.**

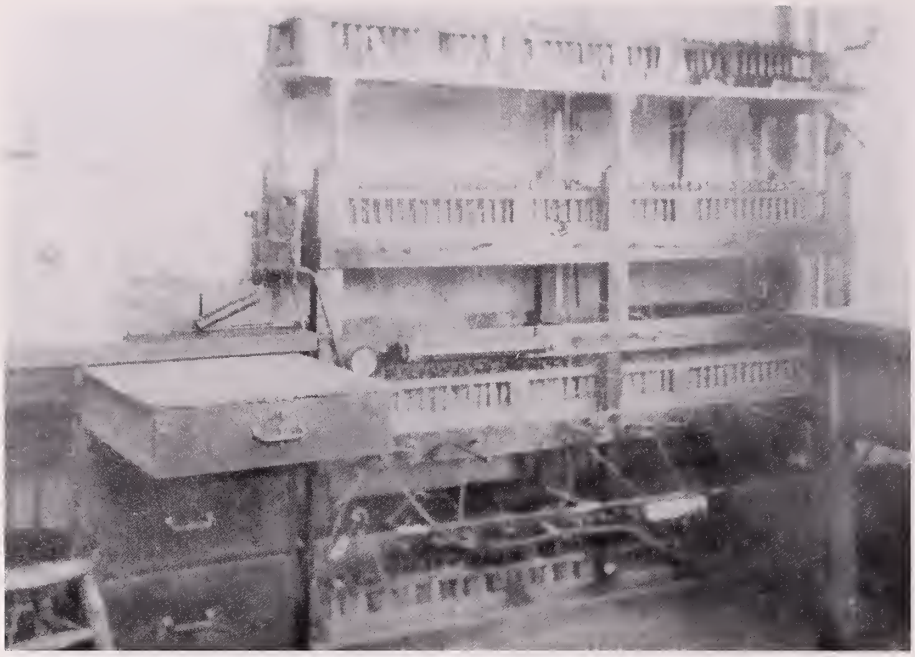
A few months into the internship, according to Banks, some of the house staff felt that perhaps the rules were a little too rigid and decided to discuss this with Blumgart. Some more radical souls talked briefly of getting up a petition, but this dangerous idea was dismissed by the majority. The next morning there was an emergency call. All house staff were to report immediately to Blumgart's office. They arrived to see him looking very grim. Evidently word of the dining room conversation had been leaked to the chief. "If anyone doesn't like it here, they can pack up and get out right now!" he said. No one did and they all filed out sheepishly.

As head of the Harvard Department of Medicine at Beth Israel, Blumgart approached his teaching responsibilities with great seriousness. He was a gifted and impressive teacher, though he confessed to a friend that he never got over being nervous before a lecture. At Walter B. Cannon's suggestion, he initiated a course on the physiological basis of disease, which was always oversubscribed. He also gave the introductory clinic for freshman medical students for many years, using his own patients. A favorite subject was a patient with heart block, permitting him and Paul Zoll '36 to explain the dramatic and life-saving results of using the pacemaker that Zoll had developed at Beth Israel Hospital.

Blumgart is described by his contemporaries as reserved, always composed, with a dignity that could be icy; he was soft-spoken but enormously tenacious. He was generous in many ways, but it was never easy for a member of the staff to challenge him in public. There is a biography of Henry Ford entitled, *We Never Called Him Henry.* At Beth Israel Hospital, they never called him Herrman. To this day his residents and former faculty, now in their 70s and 80s, find it difficult to refer to Blumgart by his first name.

It was very important to him, however, that his protegés, students and house officers, succeed. He furthered their careers in every way he could, interceding personally time and again to make sure they got training in the very best laboratories or clinics available for their particular specialties at other institutions. He was loyal to them and he retained their loyalty throughout their lives.

His iron self-control served him well in the numerous unavoidable



**Early Geiger counter used to detect radioactivity in the measurement of circulation time.**

arguments with other chiefs or with the hospital administration. The story goes that when Jack Fine, the brilliant but volatile chief of surgery would come to Blumgart's office to discuss a point at issue, Fine's voice would be heard louder and louder from behind the closed door while Blumgart's got softer and softer. Then the door would be flung open and Fine would stalk out. Blumgart had won his point.

He managed to get the hospital administration's approval for a small salary to be allotted to an assistant librarian who would work in the small hospital library in the evening. This position was reserved for an impoverished Harvard medical student who, by virtue of the appointment, could have free meals at the hospital. Irving London '43A and Bernard Davis '40 were two former medical students, later eminent leaders in American medicine, who benefited from this thoughtfulness.

Blumgart's early interest in psychiatry and in the mental origins of illness never left him. This was partly due to his brother Leonard's influence and partly to the intellectual temper of the times.

An aftermath of every war, it seems, is the rediscovery of the importance of mental illness. During World War I, Blumgart's mentor, Francis Peabody, had been in charge of a ward of soldiers with "irritable heart," or circulatory neurasthenia. Peabody, whose approach and style were consciously copied by his protegé, became intensely interested in the role of emotions in illness and was a good friend of Morton Prince, the Harvard and Tufts professor of psychology, who wrote popular books about split personalities. Blumgart's first wife, Ruth Mack Brunswick, was analyzed by Freud and became a noted psychoanalyst herself. And Blumgart was later responsible for the recruitment to Beth Israel of Grete Bibring and her husband, Edward, who founded a center for psychoanalytic study. Blumgart's George Washington Gay Lecture in 1963, entitled "Caring for the Patient," has a contemporary sound in the way he acknowledges the role of emotions in illness:

"If you increase your skill and regard to dealing with the patient as a human being with problems and difficulties, and understand the inter-relationship between that person and his disease, you will become better diagnosticians, and what is more important better physicians. ... Illness brings many moments of vast loneliness, none more difficult than the long journey on a flat, hard uncomfortable stretcher from the ward to the operating theater. Never have I known patients more appreciative of a familiar figure than during that anxious trek and during those moments as they lose consciousness."

Blumgart's later research interests included the possibility of treating heart disease by reducing thyroid function, a concept now outmoded. But important in the light of later developments was a detailed and groundbreaking study of the functional anatomy of the coronary circulation, carried out with Monroe Schlesinger of the Department of Pathology, and with Zoll and Al Freedberg, which is the basis for the current treatment of coronary heart disease with bypass and angioplasty. Blumgart was also editor of the journal *Circulation* for 10 years.

There was another unexpected, interesting accidental footnote to Blumgart's story, if not so serendipitous. In the early 1940s a young Czech refugee physician, who was visiting the teaching wards at Beth Israel Hospital, brought the news that a German resident in urology named Werner Forssman had succeeded in catheterizing his own heart with a ureteral catheter. Mixed venous blood could thus be obtained and accurate cardiac outputs measured for the first time by application of the Fick method. Freedberg proposed to Blumgart that such studies be initiated at Beth Israel Hospital.

It must have been very tempting to someone who had studied with Drinker and Lewis and who had invented the first practical method of measuring circulation time to get in on what promised to be a new technique, which would open up vast areas of investigation in clinical cardiology. But caution prevailed. Putting a foreign body right into the heart seemed like an awfully dangerous thing to do. One life lost in needless experimentation would blacken the name of the depart-

ment that he had raised and cherished for a long time. "If we have an accident," he said to Freedberg, "the hospital will go down the drain."

Andre Cournand and Dickinson Richards eventually won the Nobel Prize in Medicine (shared with Forssman) for their studies with the cardiac catheter at New York's Bellevue Hospital. Cardiac catheterization did not come into its own at Beth Israel Hospital until some 35 years later. In retrospect it was perhaps the greatest mistake of Blumgart's distinguished career.

In 1962, at the age of 67, Blumgart retired and was succeeded by his brilliant young protegé, Howard Hiatt '48. Blumgart continued to teach and was an influential member of the Admissions Committee for Harvard Medical School. He always spoke last at committee meetings, quietly but with tremendous effect. Not infrequently he took the unpopular view of supporting the brilliant but unstable candidate in whom the possible reward might outweigh the recognized risk.

After I was offered the position of physician-in-chief at Beth Israel Hospital in 1972, as Hiatt's successor, I visited Blumgart to talk about it. He had an impressive quality of kindness and warmth, combined with an eagle-like dignity. His appearance had hardly changed since his pictures taken at the opening of the Thorndike Memorial Laboratory when he was barely 30; his hair was still black, his Harvard accent impeccable. He told me how he had always tried to emphasize the strengths of this relatively small hospital in the Harvard system, develop its contribution to teaching and to recruit young men in areas not covered by other hospitals. He told me that he thought I would like the Beth Israel and would learn from it and he urged me to come. He told me to get everything in writing. He was right on every count.

In the last few years of his life he fell victim to a succession of vascular events: two heart attacks and a stroke that left him without the power of speech. Laboriously, with immense resolve, he gradually regained the ability to form words and sentences and to communicate with his friends and family again.

In 1977, at the age of 82, he developed a carcinoma of the colon, which William Silen removed at Beth Israel Hospital. He was sent to the Stillman Infirmary to recuperate. There one evening, after his daughter Ann had said goodnight and left, he wandered around the hall in his bathrobe. He stopped by the bed of a young Harvard College undergraduate, hospitalized with infectious mononucleosis. The young man was terribly scared because he thought he had leukemia and was certain he was going to die.

Blumgart introduced himself, sat down on the bed and took his hand. He slowly but clearly explained the nature of the benign illness. As he spoke, the words came more easily, with the old sureness. He drew the student a picture, told him that it was understandable to be upset, but that he was going to get well. The student grew calm and was finally able to sleep. Later that night, Herrman Ludwig Blumgart died.

That was the final and wonderful gift of serendipity. It must have been the happiest of accidents to be able to feel again the magical power of the white coat, the pleasure of speaking words that soothed and relieved and healed—to experience once more the secret joy of being a physician.

He stood, in his time, for a mixture of rigorous honesty, scientific excellence and human compassion. He would surely be pleased to see how, 65 years later, the enterprise he started has flowered and the qualities of intelligence and compassion that marked his life shine in the institution that he helped to build.

*Franklin H. Epstein is William Applebaum Professor of Medicine at Harvard Medical School and the Beth Israel Hospital Department of Medicine. He was Herrman Blumgart Professor of Medicine and physician-in-chief from 1973-1980. This is adapted from an after-dinner talk to the Department of Medicine, Beth Israel Hospital, at the Harvard Club of Boston on March 18, 1993.*

**Herrman Blumgart (center) with Paul Zoll (left) and A. Stone Freedberg, about 1950.**

*The Physician-Scientist:*

# Dual or Dueling

*by David A. Shaywitz*

photo by Stuart Darsch

# Degrees?

*"SOMETIMES I PINCH MYSELF—I'M doing what I've always wanted to do. Two of the things that make you feel best are making discoveries in lab and working with families of sick children. I get to do both."*—Michael Kastan, MD/PhD, Department of Pediatric Oncology, Johns Hopkins University.

*"Both science and medicine are so demanding—it is impossible to do both well. I think it is becoming increasingly clear that you have to do one or the other. It is important to collaborate closely. I think that physicians should understand science well enough to communicate with the scientists, for example, but I don't think they need to do PCR, etc. Similarly, I don't think that scientists need to draw blood and lay on hands."*—David Botstein, PhD, professor and chair of genetics, Stanford University.

For many of us, the MD/PhD represents an elegant synthesis of two great passions—a love for the practice of science and a love for the art of healing. Fundamentally, the dream many of us share is to be able to elucidate an essential biological process and then apply this knowledge to the care and treatment of patients. This idea of conducting first-class basic research while maintaining a meaningful clinical interaction is extremely appealing and speaks of a synergy that, in many ways, is the organizing principle of the MD/PhD program. Although some of the nation's best contemporary scientists and physician-scientists support this paradigm, however, many others feel that it represents an unrealistic—and in some ways counterproductive—ideal.

Can one do first-class research and be an excellent clinician? "No," answers MIT cancer biologist Robert Weinberg. "It is a destructive myth on which American academic medicine operates because it encourages people to try something that is impossible to accomplish. Many people have excellent clinical skills and maintain a charade of meaningful research, but it is just that—a charade—and one which represents an enormous waste of resources. I can count on one hand the people who are doing excellent science and maintaining a foot in the clinical door; it just is not possible. Each of the two, individually, is too demanding."

*For many of us, the MD/PhD represents an elegant synthesis of two great passions.*

Yet others assert that the career model of a physician-scientist is still quite viable. "It has evolved," says Judah Folkman '57, a pediatric surgeon at Children's Hospital who pioneered the study of angiogenesis, "into an array of different types of careers having many degrees of freedom and gradations. Where are the role models for the next generation of physician-scientists? They are all over the place, and each has arranged his or her own personalized mix of patient care and research, sometimes in a sequential fashion, sometimes side by side. And they are having more fun than they want to let on."

Not only is the integration of basic science and clinical medicine possible, say some researchers, but it is also necessary. "Given today's technology and knowledge, there is a need for people who understand medicine to be involved in research," observes developmental biologist H. Robert Horvitz, who maintains one lab at MIT and is involved in a major collaborative effort at the MGH. "There are medical problems that, for the first time, are tractable scientifically."

Adds Harvard transplantation surgeon Joseph Murray '43B, "It is absolutely necessary that clinicians be basic scientists, because basic scientists will never be clinicians. When you take care of patients, you get exposed to problems that are compelling, problems that are worth pursuing in the lab."

Critics of the dual-career track, however, such as Stanford biochemist (and MD) Arthur Kornberg, contend that "doing clinical medicine properly—looking after patients in a meaningful way, keeping up with important advances, etc.—has a major negative effect on research."

Who is right? Is it possible to combine basic research and clinical medicine in a career and if yes, then to what extent? Does the physician-scientist emerge from the long training as a "superdoctor," equally comfortable at the bench or the bedside, or as an over-educated, over-committed and overwhelmed thirtysomething who is, in the words of Weinberg, "a jack of all trades, but a master of none?" These are very difficult questions for us to ask about ourselves, but ones that every MD/PhD will and must confront.

The Medical Scientist Training Program was initiated in 1964 as part of an effort from the National Institutes of Health to create a cohort of individuals who might bridge a perceived gap between bench researchers and clinicians. Currently, the MSTP grant funds MD/PhD programs at 32 universities and supports approximately 800 students; a number of students also pursue both degrees without MSTP funding. For MSTP students nationally, the average time required to obtain the combined degree is approximately seven years; the average at Harvard is closer to eight years, with training periods of nine and ten years not unheard of.

Though long, the MSTP is also very popular: last year nearly 300 students applied for one of Harvard's five first-year positions. For students committed to clinical medicine, the program provides an opportunity to develop a grounding in basic science. Even if they don't pursue basic research, they can still follow it and perhaps more easily anticipate where advances might

have important clinical implications.

For students more interested in bench research, the program provides an opportunity to develop a familiarity with clinical issues, which might both inform their direction of research as well as suggest areas where a clinical implication might be pursued. Finally, for students interested in working in both realms, the program provides the basic education and vocabulary required to understand the needs and the resources of both the lab and the clinic. Traditionally, the first group of students moves on to become "academic physicians," the second group, "basic scientists" and the third group, "physician-scientists."

When the combined degree program first started, it was greeted with some skepticism by clinical faculties. "They took awhile to come around," says Lee vanLenten, director of the National Institute of General Medical Science, the NIH division that oversees the MSTP program. "Their concern was that for the combined degree students, the PhD was the primary motivation and the MD was second—that these students couldn't be well-trained clinically because they weren't interested." Currently, however, this concern seems to have dissipated; MD/PhD students compete quite successfully for both residencies and medical school faculty appointments.

Some bench scientists are also enthusiastic about the combined degree program. "The future is with the MD/PhD students," says University of Washington geneticist Leland Hartwell. "They'll make a difference in 10 years. It is a very demanding, very anxiety-ridden route, but having a real medical training and then doing a rigorous PhD is a truly valuable and worthwhile investment."

Not all bench scientists share this perspective, however. Many feel that a career in basic science is, in general, incompatible with almost any clinical responsibilities. They argue that it's fine if someone wants to apply advances in basic research to problems in the clinic, but they believe that while this research may be good and it may be important, it is not basic research. For people with dual training to devote themselves to basic research, with no clinical responsibilities, may also be reasonable, since the cost in time of the additional training may be balanced by the clinical perspective it affords. MD/PhD graduates can expect disappointment, however, if they plan to combine basic research with a clinical interaction. Today's basic research, the reasoning continues, is too demanding to combine with anything else, and clinical medicine detracts from basic research rather than complementing it.

*"Many people have excellent clinical skills and maintain a charade of meaningful research, but it is just that—a charade."*

Robert Weinberg

In essence, the major arguments against conducting basic research while maintaining a clinical interaction are: (1) the long training period detracts from optimal research time; (2) bench research requires absolute focus; (3) no one can maintain two different careers; (4) clinical medicine and bench science are fundamentally different and are not mutually reinforcing.

### The Long and Winding Road

The long training period required for MD/PhDs represents, to many researchers, the most significant potential pitfall for MD/PhD students. Marjorie Oettinger, a biologist at the MGH, began in the Harvard/MIT MD/PhD program but departed after completing the PhD to start her own lab: "I started out quite sure I wanted to and could do both; it seems less easy now. At 20, you're sure that you'll be awesome, that you'll have an infinite amount of time and skill, and that you will push your career as much as possible. Along the way—as you do research seven days a week, sixteen hours a day, and it's still going slowly—you realize that you'd also like to have kids and that you'd also like to do medicine, and you start counting the years."

"My major concern about the MD/PhD program is the time it takes," agrees MIT biologist Phillip Sharp, whose lab has trained many MD/PhD students. "I don't like the idea that people emerge ready to do mature science at age 35 and not at 27 or 28. The most scientifically productive years are immediately after training, while you're developing as a young person with energy, intensity. If you displace out to 35, you have older families, greater responsibility. If that's the first time you're scientifically independent, it's late."

MIT biologist David Baltimore expresses similar feelings: "I think people should make the decision when they graduate from college," he says. "I think it's fine to choose an MD/PhD program if you decide you truly need both kinds of education, but I think that most people enter the program because they are avoiding the decision. In avoiding the decision, they are wasting the best years of research life."

The real issue, many believe, isn't that MD/PhDs run out of time, but rather that since they start their careers when they're older, they tend to want to be established too quickly. Thus they tend to do more superficial research, rather than truly investing themselves in an important problem. "They're less likely to take the long-

term perspective," says Baltimore. "In a sense, their desire is too burning."

Many physician-scientists, however, counter that the time issue is too often exaggerated. "When I applied to medical school," MGH neurologist/neuroscientist Anne Young relates, "the Harvard recruiters told me they didn't believe in MD/PhD programs because they take much too long. Well, I went to Johns Hopkins and was on the faculty by 30, had my first grant at 30 and had published 40 papers by 33. You can find MD/PhDs who are productive early on."

"It is a long road, but you get a unique perspective," observes Arlene Sharpe '82, a member of the HMS pathology department who runs the core transgenic facility at the Brigham and Women's Hospital. "Although most MD/PhDs don't reach independence until their mid 30s, I found that doing both taught me how to juggle."

### A Need to Focus

To many scientists, a career of basic research requires absolute focus without the "distractions" that clinical medicine represents. "If you want to be successful in basic science," explained the late chemist Linus Pauling—who in 1949 first coined the term molecular disease—"you probably have to devote all your time, all your thinking to it. You can't do this if you have patients—the primary responsibility of physicians is to take care of patients. If you want to discover the double helix, you can't do it while practicing clinical medicine."

Yet, many physician-scientists worry that by maintaining a restrictive focus, many bench researchers fail to appreciate the larger picture.

"Big discoveries are serendipitous and you need to get the big picture to advance the way we think," argues Michael Kastan, a pediatric oncologist at Johns Hopkins University who studies the p53 gene. "In graduate school, I thought that the questions we were asking in the lab were the most important things there were. I've since realized that it's not optimal for me to approach science that way; in addition to being good at the details, as a principal investigator you need to know how your work fits into the big picture so you can ask big-picture questions. This is the biggest advantage of clinical work."

Children's Hospital pediatric hematologist Stuart Orkin '71, a physician-scientist who attends on the wards one month a year, feels that although in practice, the bedside rarely informs the bench, and although he has received "very limited insight from the wards," the MD/PhDs nevertheless possess a perspective that is different. Orkin says that in his lab, the postdocs with MD/PhDs "seem, in general, to be intellectually more mature, to have a more global sense of biology, of where things fit, but they may be less equipped to do the actual experiment. By contrast, the PhDs are often better able to do the experiment, but they are less able to formulate how it fits in."

"It's a trade-off," explains Harvard geneticist Philip Leder '60. "Clinical involvement takes time from full-time research but it provides insight into nature and a broad view of human biology and pathology."

### Dual Training vs. Dual Career

Many scientists—and particularly, many physician-cum-scientists—consider the clinical training useful but the combined career unrealistic. Says Stanford geneticist David Botstein: "I think it's reasonable to obtain both educations, but not to pursue both careers."

Joseph Goldstein, who chairs the Department of Molecular Genetics at University of Texas-Southwest and who is often cited as a model physician-scientist, says "It's harder and harder for someone to do both. Science is a tough world and things move very fast. You can do 10 to 20 times more now than what you could 20 years ago. To be competitive at the forefront of science, you must spend 95 percent of your time thinking about it and doing it. If you want to do cutting edge research, it will be almost impossible to be responsive to patients who call you up."

> *"If you want to discover the double helix, you can't do it while practicing clinical medicine."*
>
> Linus Pauling

Don Ganem '76, an infectious disease specialist at University of California San Francisco (UCSF) whose research focuses on the mechanism of reverse transcriptase action in hepatitis B, acknowledges that he has had to make compromises in order to compete with those doing research 100 percent of the time. He says, however, "if you're well trained, you can still function at a high level in your field. It's possible to stay well read in areas that are important to your daily work, but it's harder to stay up on things further afield; I just can't do primary reading in these areas. Similarly, I find that in medicine, I must concentrate on things directly affecting my specialty."

Robert Glickman '64, chair of medicine at the Beth Israel Hospital, asserts that "doing both is possible under very discrete circumstances. You need a support system. I think you must set the clear, clear, clear expectation that you'll spend the dominant part of time doing research. Focus on a concentrated area, and don't get diverted."

Doing both science and medicine well "is possible in certain fields, less achievable in others," agrees Stuart Lipton, a neurologist and neurobiologist at Harvard Medical School. "It would be very difficult in neurosurgery, for example; if you're choos-

ing a surgeon, you want one who operates at least every other day. In medicine, while you need an intense initial training, it is not necessary to be in clinic every day."

### An Elusive Synergy

One of the most persistent critiques made by basic researchers centers on the idea of cross-fertilization between the lab and the clinic. "The idea that basic science and clinical medicine are complementary is naive," says MIT cancer biologist Tyler Jacks, who was (briefly) a member of UCSF's MD/PhD program before deciding on a career of full-time research. "The bench and the bedside involve radically different things. The kinds of skills you need on the wards don't apply to the study of the cancer cells in the tissue-culture dish, for instance. There are examples where careers were launched by identifying a problem in disease and approaching it from the molecular or cellular point of view. But crosstalk once you've made the decision to pursue basic science? I think not."

This synergy "rarely materializes" agrees Baltimore, adding: "There is a real dissociation between science and medicine; the work occurs at a different level. Medicine is the solution of pressing problems with insufficient information, and science is more or less the opposite; you have the time to get the information."

"Some people have active labs as well as clinical responsibility," observes Jacks. "They do it because they enjoy it, because they get satisfaction from it; in general, they don't do it because the kinds of information they receive directly benefits their research. However, there is a sacrifice involved in maintaining the clinical work."

Unquestionably, many MD/PhDs find unique fulfillment in combining both strands of their careers.

"The idea of going from bench to bedside and bedside to bench came from an era before molecular biology, the era of metabolic studies," NIH Deputy Director Ruth Kirkstein explains. "Now, doing molecular biology doesn't require you to be two feet from the patient. Your clinical experience, however, still gives you an improved understanding of the patient's disease and of the basic processes that underlie it."

Anne Young also cites the need for an interface: "For example, you can find protein processing pathways for intracellular signalling systems but you need to ask, what is its relevance? You must have insight into human disease to know how to ask the questions."

### Alternative Approaches

While the MD/PhD program represents one approach towards bridging the gap between clinical medicine and bench research, it is not the only option. For example, National Institutes of Health (NIH) Director Harold Varmus "would like to see more diversity in the kinds of programs we offer students; for example, PhD programs with more clinical material." Such programs have already been initiated at Harvard and UCSF, as well at several other medical centers around the country.

The Harvard-Markey Biomedical Scientist Program "represents an effort to broaden the training to the MD/PhD," according to its director, H. Franklin Bunn. Graduate students in this program devote a full year to the study of human biology, receive clinical exposure, and are also invited to become members of the medical school's five academic societies.

Another approach towards bridging biology and medicine, developed and implemented by University of Washington biologist Leland Hartwell, involves weekly human genetics seminars that aim to "encourage graduate students in basic research to think about clinical implications, to think about the connections between science and medicine."

### Implications

The dramatic changes experienced by biology during the last 25 years represent both a challenge and an opportunity for today's physician-scientist. At first blush, the direction much of basic science has taken might seem to represent a barrier to the physician-scientist or, at best, a distraction: worms don't look much like people, yeast don't get cancer, and it is sometimes not immediately obvious that months of sorting through fly mutants or microinjecting xenopus embryos is going to lead to incisive clinical inferences. On the other hand, the molecular study of model organisms has allowed us to increasingly appreciate what Hartwell has termed the "unity of life." Genes involved in processes from cytoskeleton organization and secretion to cell-cycle regulation and apoptosis have been exquisitely conserved.

*"The idea of going from bench to bedside and bedside to bench came from an era before molecular biology, the era of metabolic studies."*

Ruth Kirkstein

To the extent that scientists and physician-scientists agree on the utility of model systems, the distinction between "basic" and "applied" research can become extremely grey; is the study of the role of the ALS gene in worms basic or applied? What about the study of the p53 gene in transgenic mice? Indeed, as the study of disease increasingly focuses on the examination of specific genes, and as the study of fundamental cellular processes increasingly turns up genes implicated in disease, the targets for both the scientist and the physician-scientist have become, in many cases, substantially

*At a certain level, both the questions we all ask as well as the approaches we all take are essentially the same.*

the same.

Does the argument that basic research and disease research are moving closer together define or obviate the role of the physician-scientists? Why not just encourage MDs and PhDs to work closely with each other? An answer, perhaps, is that MDs and PhDs still speak very different languages, and often conceptualize problems quite differently. Physician-scientists, having trained rigorously both at the bench and in the clinic, can help clinicians and scientists to understand each other's perspective, and to formulate questions in a manner meaningful to the other group. But even more importantly, MD/PhDs offer what might be described as a unity of vision. Uniquely, they have the opportunity to identify an important biological question in the clinic, the means to pursue an intellectually satisfying answer in the lab, and the motive to bring an enhanced therapeutic perspective back to the clinic.

In the long view, the hope is that the combined-degree training, as well as alternatives such as the PhD track suggested by Varmus (and exemplified by the Markey Program), and courses such as the graduate class in human genetics initiated by Hartwell, will not just provide the basis for productive collaboration, but will also allow us to better understand natural systems—whether the protein is from aplysia or a primate, whether the vesicle is in a nematode cell or an islet cell, whether the goal is to understand yeast or to treat patients. The point is, at a certain level, both the questions we all ask as well as the approaches we all take are essentially the same.

And finally, for MD/PhD students in the midst of their training, it seems meaningful to note that nearly all the physician-scientists interviewed for this article felt that their own experiences were somehow idiosyncratic or atypical: "I didn't follow the usual route" or "I'm a special case" or (most frequently) "I was really lucky." If there is a designated route to becoming "a successful physician-scientist," there aren't many people who follow it. This responsibility to carve our own paths, while perhaps somewhat intimidating, is also empowering; it suggests that we have the real opportunity to help define for ourselves—and for our generation—what it means to be a physician, what it means to be a scientist and, perhaps, what it means to be both.

*David Shaywitz, a sixth-year MD/PhD student, studies protein sorting in the laboratory of Chris Kaiser, Department of Biology, MIT.* *The contributions of Linda Burnley and Molly Lanzarotta to this article are gratefully acknowledged.*

# Seventh Shift *by Charles C. Hartness*

THE CARDIAC ARREST WAS ROUTINE. The doctor took the radio call when the ambulance was five minutes out. There may have been an added sense of urgency to the paramedic's voice as she delivered the prehospital report over the radio, but the doctor did not detect it. He had worked 12 hours in the emergency department each of the last six days and after tonight he was off for five.

The patient arrived. He was 64, and looked fit with a full head of white hair, and thick muscles beneath the tanned skin of his bare chest. One paramedic squeezed oxygen from an ambu bag through an endotracheal tube into the man's lungs. Another performed chest compressions. The patient had no risk factors for heart disease, but he was nevertheless dead. The doctor had nothing to add to the paramedics' care. "Okay, I think we can stop." He glanced up at the wall clock. "Time of death is 19:46."

As he walked from the resuscitation room, the ward clerk told him the man's family was in the quiet room. Six new charts stood in the to-be-seen rack. This shift was off to a bad start. He passed the registration desk on the way to the quiet room and grabbed a gummed label with the man's name on it and stuck it to his left palm for easy reference. It is poor form to forget the name of the dearly departed as one introduces oneself to the next of kin.

The quiet room was down a long hallway that attached the new emergency room annex to the old hospital building. As he walked toward the room, he glanced at the sticker in his palm. Walter Egan. DOB 06-22-30. His father's age. He imagined the people waiting for him in the quiet room. Perhaps a family something like his own. A sweet, short, plump aging widow. Two or three children in their 30s, with their respective spouses and perhaps a grandchild or two. One of the children will serve as the spokesperson for the group. For some reason it's always the child, never the widow, who asks the questions.

The door was ajar. The doctor paused before he reached it, took a relaxing breath and stepped into the doorway. The room was occupied by a young woman, one of the daughters he supposed. She looked about 30, and was strikingly beautiful, with thick wavy auburn hair and pale lightly freckled skin. She wore a printed sundress of daisies on an indigo background. On her feet were yellow canvas thongs. She held a tiny baby cradled in her arms, wrapped in a thin blanket. Its head was covered with fine red hair, of a brighter shade than the mother's. The left shoulder strap of the woman's dress dangled at her elbow and the baby was busily nursing at her freckled breast.

She was so attentive to her baby, she did not see the doctor at first. When she did, she looked up at him with her angelic face, a mother's face full of hope. Hope that what she already knew would not be true. Hope that he would tell her it was all a mistake, a mere fainting spell, requiring only a few tests and a day in the hospital to make things right again.

"Doctor?"

He nodded. "Are you with Mr. Egan?"

"Yes, I am his wife."

Wife? Not daughter?

The moment of truth was upon them. The doctor wanted someone else in the room with them before he said what he had to say. "Is there no one else here with you?"

"No, we have no other family here. We are originally from back East."

"I see." The doctor tried not to look at her breast as he sat on the sofa beside her. He reached out and lightly laid the fingers of his left hand against the skin of her right forearm. "Mrs. Egan, I am so sorry to have to tell you this, but your husband has died." He wanted to continue. He had done this a hundred times before but he suddenly did not know what to say. This woman, this widow, was too young, too lovely, too alone to be hearing these words.

She looked at him. Her exposed breast heaved as she drew a ragged breath. Her baby continued to feed. She looked down at the baby, then back at the doctor. "I scolded him. I scolded him for not helping me bring the groceries in. I left them in the car to make a point. He finally went out to the garage. When he didn't come right back in, I assumed he was angry with me, so I didn't go out to check on him for a while. He was—he had fallen to the floor as he pulled one of the sacks from the back seat. It was the sack with delicate items, and I found him lying in a puddle of juice and eggs and milk. He is my husband and I shamed him into carrying the groceries."

She began to cry, quietly. They sat in silence. He watched as the baby nursed. Overhead a belt cried against a pulley as a ventilation fan cycled on. The doctor and the woman looked up together at the louvered duct in the ceiling. The keening of the belt was the only sound in the room, and it died away as the fan came up to speed.

*Charles C. Hartness '82 is an emergency physician and paramedic advisor in Portland, Oregon.*